

# THE AMERICAN ARCHITECT AND THE ARCHITECTURAL REVIEW



CONCLUDING A SERIES ON THE RELATION OF PIPE ORGANS TO ARCHITECTURE—  
PART III OF COLOR IN ARCHITECTURE—RECENT DEVELOPMENTS IN WARM AIR  
FURNACE HEATING—PAINT PROTECTION FOR WOOD—SOME NEW BUILDINGS IN  
LONDON AND SOME OLD ONES, BY EGERTON SWARTWOUT, F. A. I. A.—THE AMERI-  
CAN SPECIFICATION INSTITUTE—EDITORIAL COMMENT—CURRENT NEWS—ILLUSTRA-  
TIONS OF HOUSES BY DONN BARBER, OSWALD C. HERING AND DOUGLASS FITCH—  
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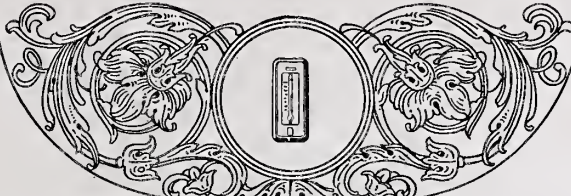
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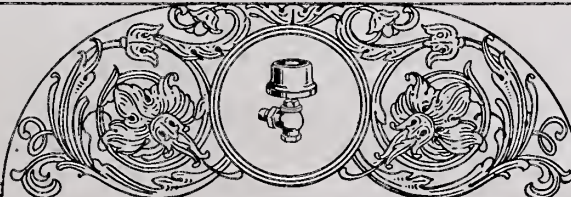


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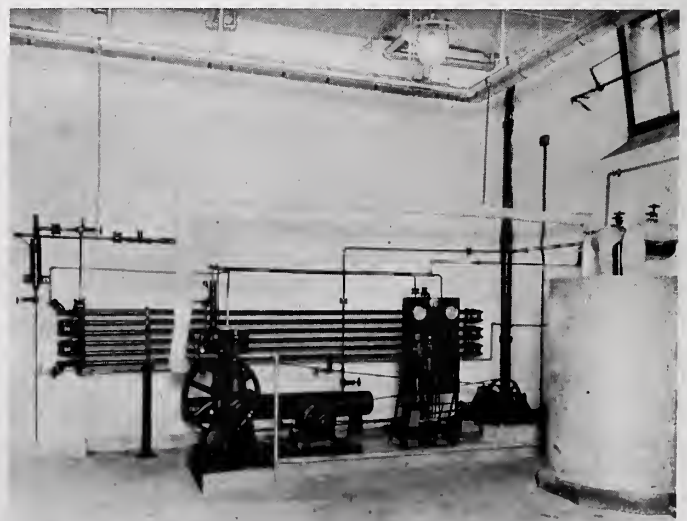
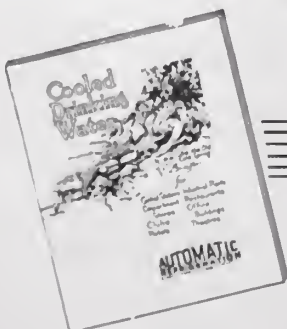
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# THE AMERICAN ARCHITECT

## THE ARCHITECTURAL REVIEW

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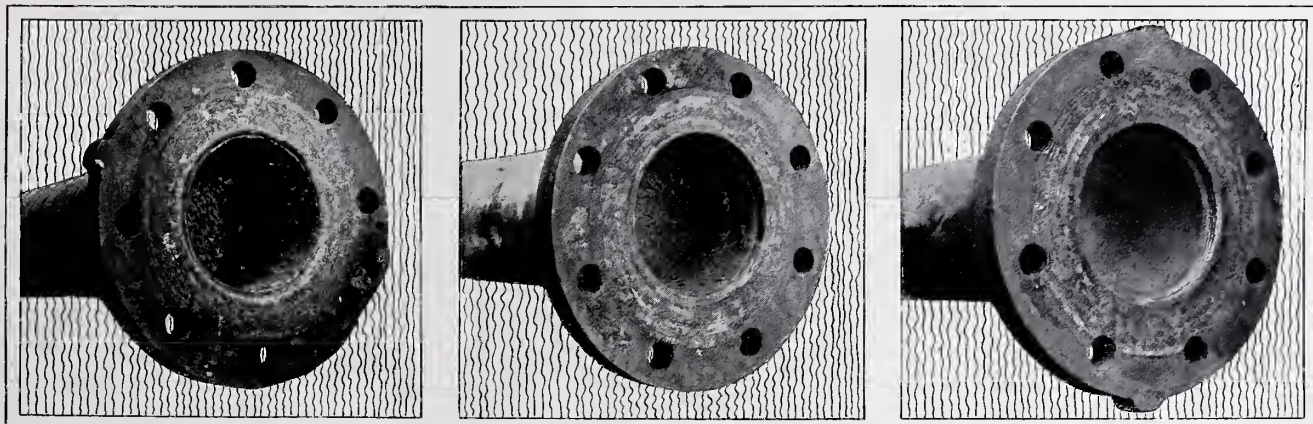
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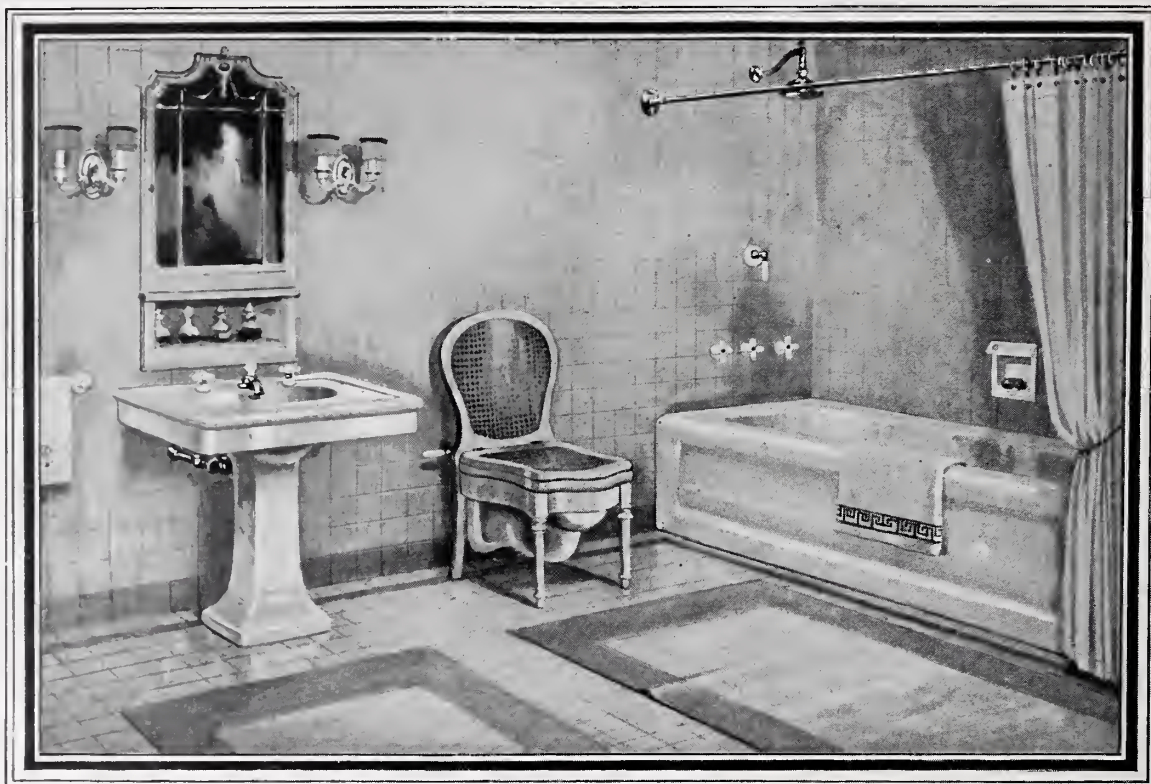
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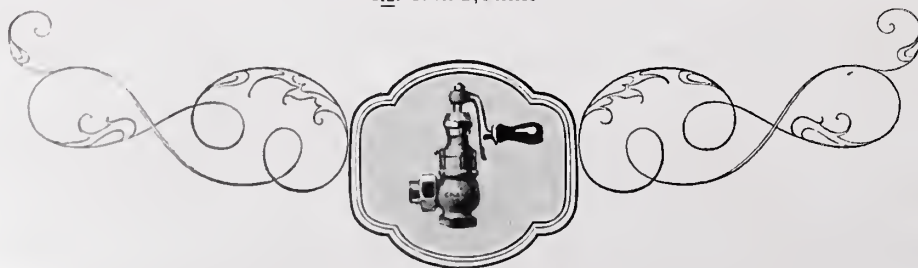
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# THE AMERICAN ARCHITECT

## The ARCHITECTURAL REVIEW

VOL. CXXII

WEDNESDAY, OCTOBER 11, 1922

NUMBER 2404

### THE RELATION OF PIPE ORGANS TO ARCHITECTURE

BY CALEB W. CAMERON\*

#### Part III—Residence Organs

THERE are many people who through lack of training or musical talent, are unable to play an organ, and yet who are lovers of the instrument, and keenly appreciative of good music, especially that of the operatic and orchestral type.

To these, the modern organ, with its wealth of tone-color, vibrant strings, and wonderfully voiced orchestral tones simulating the various sections of the orchestra, appeals with tremendous force, especially as since, within recent years, there has been under way a marvelous development in the mechanical operation of the instrument.

No longer need the organ stand idle for lack of an organist, for the self-player has been developed to a point where it not only plays the notes, but it also changes the tone-colors as pre-determined by the composer of the music, and manipulates the expression in a manner which is really human in its delicacy. In other words, the self-player has reached the stage where it is *fully automatic*, and yet *absolutely unmechanical*, in the truest musical sense.

This opens up a vast field of music to the music lover who is not a performer, but he may, should he so desire, still have the notes mechanically

played, controlling the quality of tone and expression as he desires, thus giving his own interpretation and conception of the composition full scope; in other words, express *himself* musically.

Increased interest in chamber music of this type has been aroused, and is more and more in evidence. Architects are finding that they are called on more frequently to provide space and accommodation for such installations in residences.

Too often the *necessities* which are attendant on such installations are not considered until the plans are so far advanced that *adequate provision* for the organ becomes either one of two things:—an impossibility, or an unsatisfactory compromise.

It is an old saying that a place for the organ can always be found somewhere; but a *good place*—or space—can not always be found, notwithstanding.

We are told and it is possible, to put a part of the organ in a closet under the stairs—another part in the basement—another division in a laundry, and the rest in the attic. It is possible to distribute an organ in this way, but it is *only a mechanical* achievement, not a *musical* one. The residence organ must be thought of, and treated,



Residence Organ in a House at Wenham, Mass.

\*Of Skinner Organ Company

in the matter of placement, as an orchestra, and no one would for a moment consider so splitting up an orchestra.

On the other hand, it may be stated most emphatically, that *careful planning and proper arrangement of the organ chambers and console location* with respect to each other, and to the music room are as important to the musical results, as is the quality of the organ itself.

The writer is familiar with installations in which small organs—well arranged—are far more effective and satisfying in performance than others which are twice as large, double in cost, and badly placed.

When the chamber is considered as an integral part of the plans, as it should be, and adequate space and proper location are given it, there is no difficulty whatsoever in insuring brilliant results.

Certain factors are of fundamental importance in assuring *distinguished*, rather than *mediocre* results, in return for the money so invested, and these are:—

1—Sufficient space must be allotted to the organ chambers.

2—They must be adjacent to the music room.

3—Openings between the two must be of adequate area.

4—The console must be properly located.

Let us consider in detail the demands of these four fundamental requirements.

#### SPACE

NO house is built without any thought being given to its domestic accommodations—that is a fundamental matter—and, by the same token, the size of the installation which is to be made must be approximately pre-determined in order that the architect may arrive at an economical, but nevertheless, an adequate area for the chamber. There is, however, an irreducible minimum in any event of 12'-0" in width, 8'-2" in depth, and 12'-0" in height. This last dimension may be reduced, at the rear wall, to 10'-6", but it must be full 12'-0" at the front. This space will be sub-divided into two sections.

Such a chamber will house the *smallest* installation which will be, tonally, satisfying, *but it will not permit of any further additions or improvements.*

Hence, it is extremely desirable to exceed these dimensions wherever possible, up to an area of five hundred and fifty square feet, (550 sq. ft.)—with a minimum height of twelve feet (12'-0").

The walls and ceiling should have a finish coat of Keene's Cement, the corners rounded with a 2" radius, and the floor, if possible, of concrete, covered with two coats of deck paint. There should be no windows in the chamber, and it must be thoroughly watertight. No steam or plumbing lines are to be run through it, either vertically or

even above the ceiling. Water is the organ's worst foe.

#### LOCATION

IT is, of course, understood that the *raison d'être* of a house is a domiciliary purpose, but if its prospective owner includes in his aims enter-

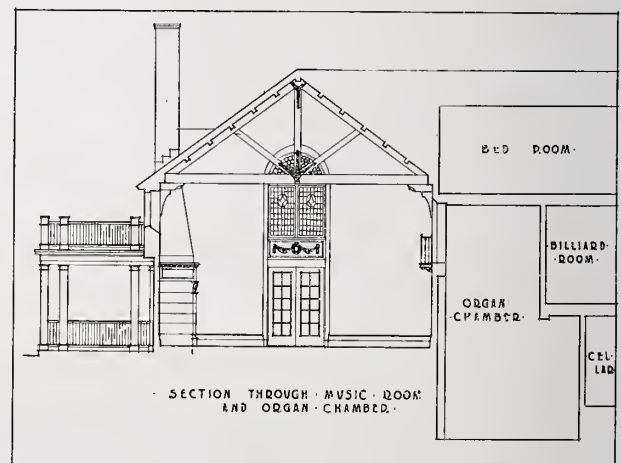
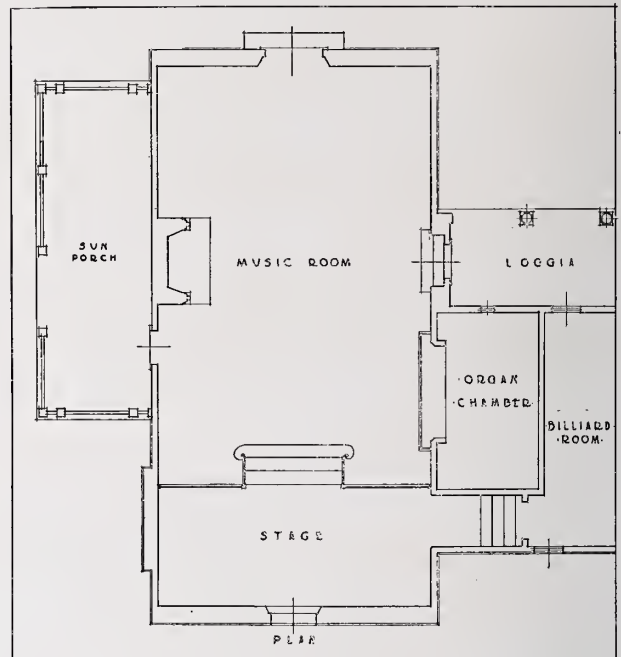


Fig. 2. "Locke Ledge," Yorktown Heights, New York, House of Arthur Hudson Marks, Esq.

Andrews, Rantoul & Jones, Architects

(For interior view see Fig. 1, opposite page)

tainment of a musical character, then that portion so devoted must be *planned* with that end in view, hence a music room of generous proportions, restful and fitting, becomes a necessity, and consequently, (and adjacent to it), the chamber for the organ.

The best location for the latter is at one end of the music room, or else at one side toward the end; the console half-way or more down the room,



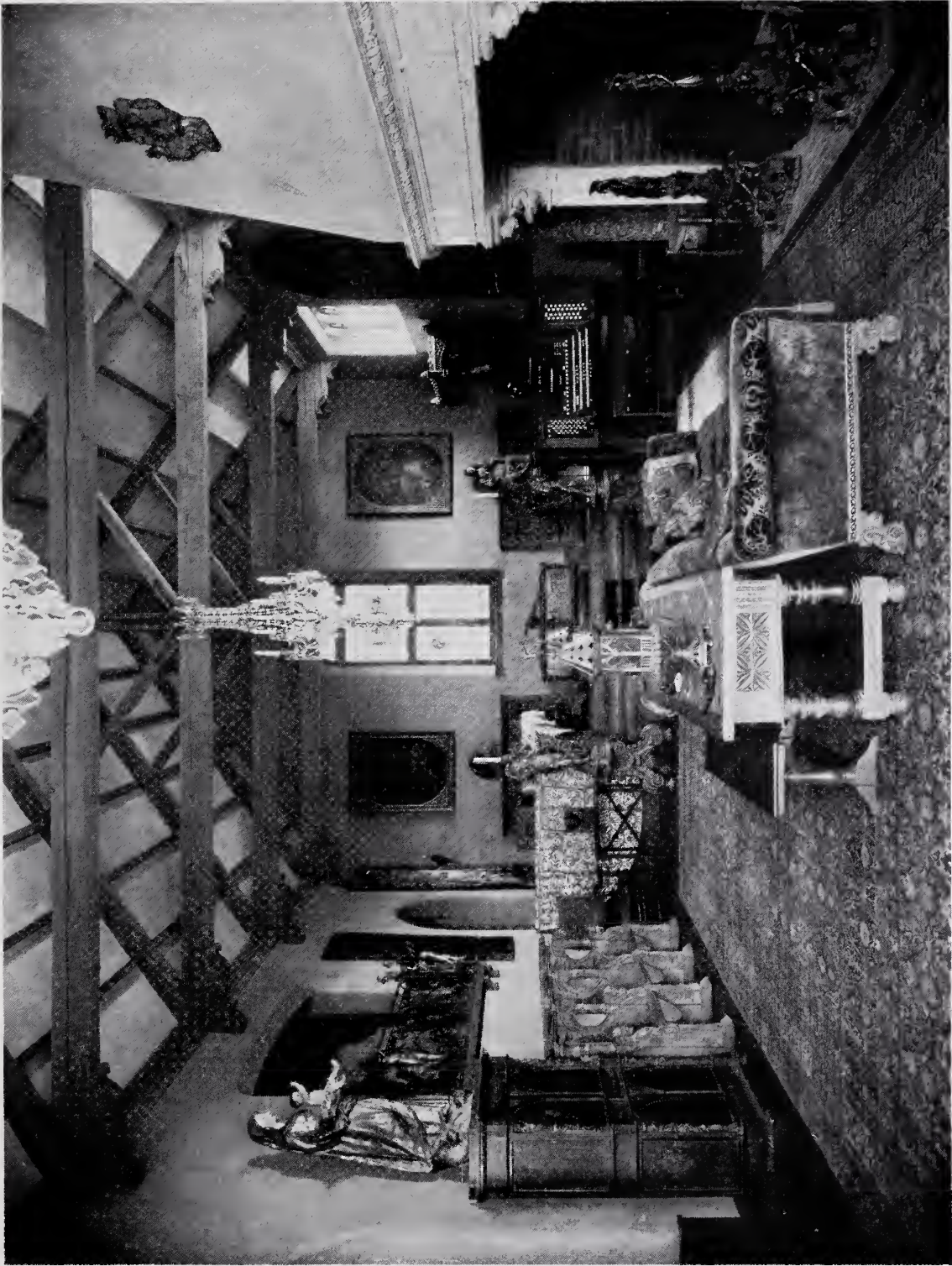


Fig. 1. "Locke Ledge," Yorktown Heights, New York, House of Arthur Hudson Marks, Esq.  
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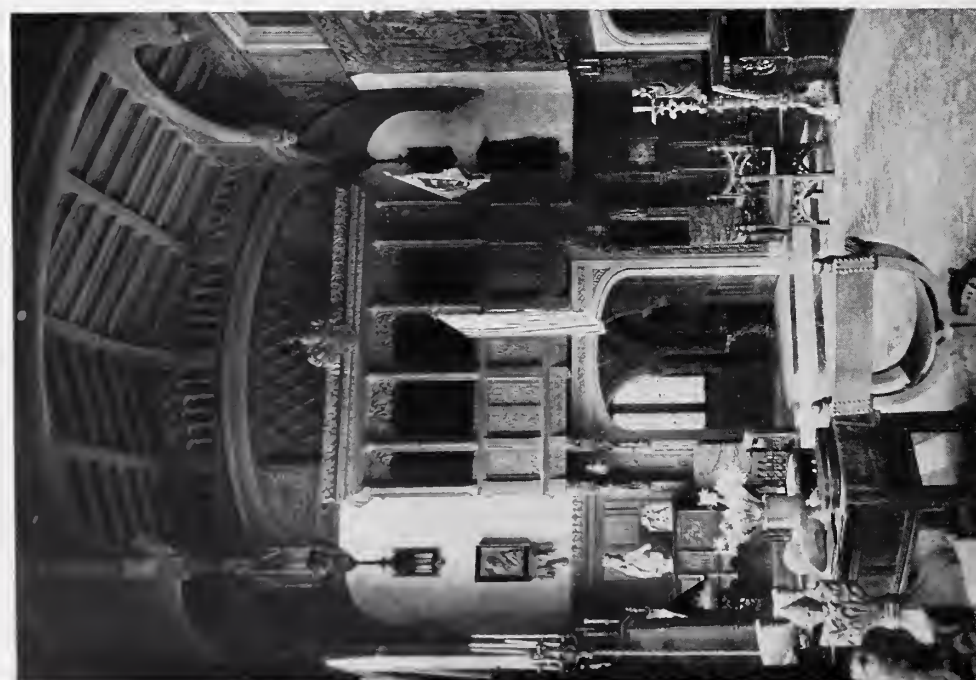


Fig. 3. Organ in upper level speaking through grille

Organ in  
Music Room of House of  
Arthur Curtiss James, Esq.,  
69th Street and Park Avenue,  
New York

Allen & Collens,  
Architects



Fig. 4. The console opposite the organ





Fig. 5. Basement installation  
Tone comes up through floor grilles

and opposite to the chamber opening, which, of course, will be well up from the floor.

This last is well shown in the illustration of the room in the residence of Mr. Arthur Hudson Marks, at Yorktown Heights, New York, (Fig. 1), and in the plans of the space (Fig. 2), which show the opening 8'-6" above the floor level, with an area of forty square feet (40 sq. ft.).

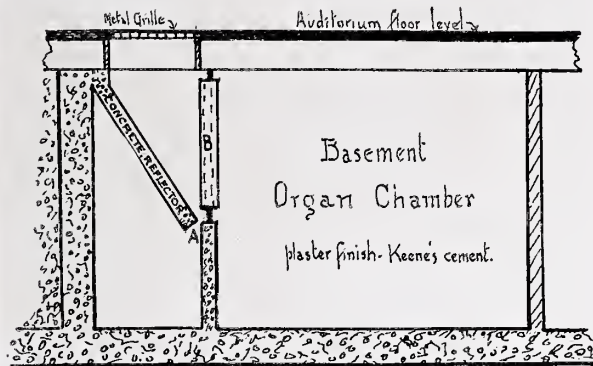


Fig. 6. Section of basement floor showing organ chamber and method of deflecting sound to the floor grille

The chamber may be behind one end of the music room on the story above, (Fig. 3), the opening masked by an ornamental grille, with the console at the opposite end of the room. (Fig. 4.) Hot air inlets should not be located so that they feed into the chamber.

It may be that neither of these locations is feasible, and that the chamber must go in the floor below the music room. Well and good, for the tone can come up through a grille set in the floor, or in the risers of stairs, being deflected.

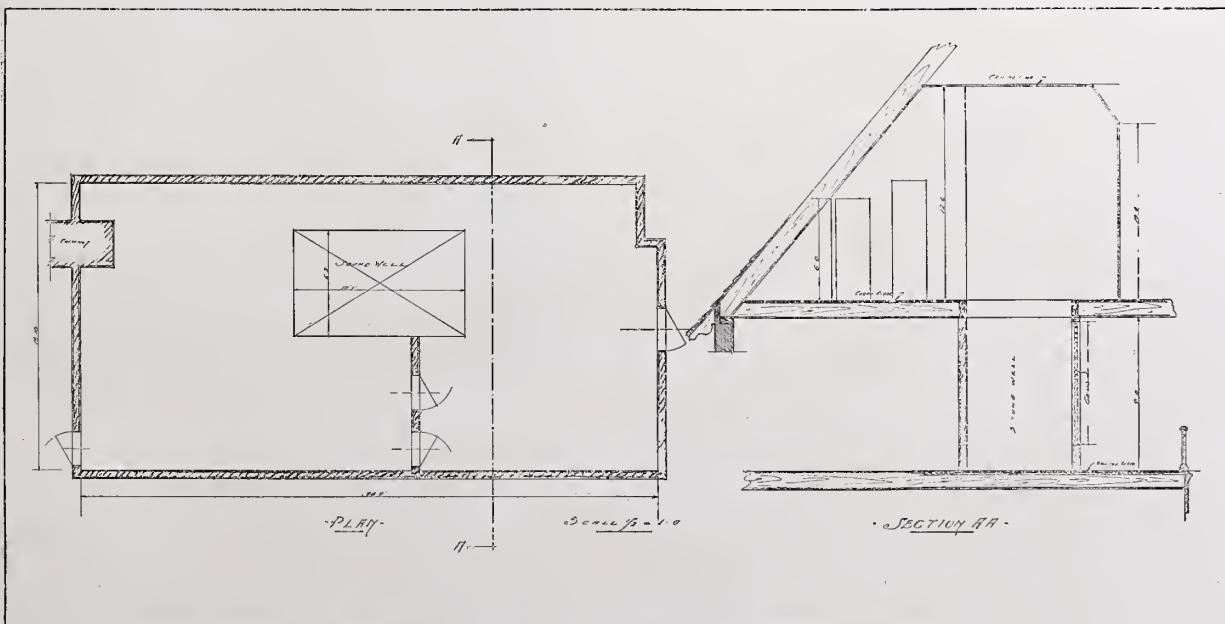


Fig. 7. A sound chamber located in top story with tone deflected down through shaft to grille

(Fig. 5.) This is least desirable, on account of dampness, but that can be successfully coped with.

If the chamber is to be in the basement, a suitable treatment of the space is shown in Fig. 6, but infinite caution must be taken as to thorough



Fig. 8. A Hall installation

waterproofing, and for a supply of clean, dry, tempered air thereto.

The dust and dirt which will inevitably fall through the floor grilles above lands on the reflector, and falls through the trap A to the space below. The tone passes through the swell-shades B, is directed upward by the reflector, and enters the main floor through the grille above.

If hangings are used to mask the openings, they must be of very sheer material, for velours or tapestries will muffle and ruin the tone.

Lastly, a chamber may be located in the top story, and the tone deflected down through the stairwell, but this must be carefully planned, otherwise the music will permeate throughout the rooms on the intervening floors, and will be weakest on the main floor level. This is shown in Fig. 7, and a stairway and hall location in Figs. 8 and 9.

As many of these installations occur in country houses, it is possible to plan, with a little forethought, so as to get, in the great majority of cases, a perfectly satisfactory layout, if the archi-

tect knows in advance that the installation is contemplated, for he is not hampered by lack of space, or by rigid building lines as under urban conditions. *That should be one of the items to be ascertained at the start.*

Care should be taken to provide a watertight way for electric cables from the console location to the chamber and motor room. Action cables are waterproofed, it is true, but nevertheless, they are not improved by running them through damp cellars, or in places where a sudden and, of course, wholly unexpected flood caused by a choked leader, or some like unbelievable occurrence, will submerge them. But it is done, and the result is useless trouble.

The blower should be housed in a clean, dry enclosure, and its temperature should be the same as that which is in the chamber. A 12" dia. g.i. duct, leading to it from the main part of the house will insure this, and there must be a like duct from the blower location to the organ chamber for wind supply for the organ.



Fig. 9. Console in Hall

#### OPENINGS

IT is really astounding how many organs, good in themselves, have been absolutely ruined, tonally, because of the lack of ability, on the part of the tone, to get out. No architect would think of 2'-6" doors for a room seating a thousand people, and yet he will put a 4' opening for



tone where one three times the size is needed. There *must be ample space* for the tone to come out, else the money is wasted, and the opening should extend to the ceiling of the chamber.

A very satisfactory result can be obtained by having a skeleton construction of the partitions between the chamber and the music room, starting seven feet above the room floor level, thus permitting the tone to flood the room through the wall hangings. In this case the chamber must be adjacent, and practically on the same level.

The matter of openings is *very important*, and we know that "to err is human," but to err in giving what may seem to be a large opening "is divine."

#### LOCATION OF CONSOLE

A CONSOLE takes about five and a half feet square of floor space, and, of course, as to its exterior, can be made to harmonize with the style and general color scheme of the room in which it stands. It must stand *in* the music room, and as far from the chamber opening as possible, (Fig. 10), yet so located that nothing intervenes between the chamber and the player.

He must be able to hear the tones as nearly as possible as do the majority of the auditors, in order that he may properly balance his instrument, and obtain effective expression. (Fig. 1.)

In the case of residence organs, there are no traditions to be followed, and the better hidden the source of the tone, the more delightful is the result. The architect has entire freedom as to method and style of treatment of the screening of the opening, save that the grilles should be light, and the openings between the solids as large as possible.

A word as to *cost* and *upkeep* may, in closing, not be amiss. The idea that a residence organ is to be classed with a steam yacht is a fallacy. The *initial investment* may be as low as Seven Thousand Dollars, (\$7,000), and thence upwards; and the *cost of upkeep* may be one, or one and a half per cent per annum. As for deterioration, that is practically *nil*, providing the instrument is kept free from water and rats.

In these articles we have endeavored to look at the matter *from the standpoint of the organ*, and to bring its needs to the attention of those, who give it a place to stand and work, feeling that they are quite as desirous of serving it, and their clients to the uttermost, and always having in

mind that, in the busy rush of their detail, they have not realized, as we have said heretofore, that the *fundamental responsibility* for the successful installation of an organ *rests on the architect*. It is *he* who says where it shall go, and how much



Fig. 10. Console in one end of music room, organ chamber opening in the other, with nothing intervening between the chamber and the player

room it shall have, *but the unfortunate thing often is* that he says it, without having any adequate idea as to what space the installation will require.

There is no great secret about organs, or organ building, and the information which is necessary can be had for the asking, for the builder is more than anxious to have adequate space, and will welcome any chance which may be given him to help toward that end.

(The End)





Interior view, Fidelity Trust and Savings Bank, Chicago, Ill.

A. H. Andrews Company, Architects

This photograph suggests well the glowing richness of color which may characterize monochromatic use of ceramic material under conditions of interior lighting. Wall, columns, entablature and banking screen are in matt glazed ivory Terra Cotta richly developed in relief yielding shadow notes of a deeper quality



# COLOR IN ARCHITECTURE—PART III

BY F. S. LAURENCE

Executive Secretary, National Terra Cotta Society

## PRECEDENT AND INITIATIVE

THE della Robbia family and their immediate successors did not know how to produce a matt surface glaze, much less one having any textural interest. This circumstance suggests another aspect in the resources of modern ceramics for appropriate finish which are open to the architect today. All the examples of the della Robbian school are in smooth bright enamels having a glassy sheen which tends to obscure form by its reflecting action, particularly in its susceptibility to glittering high lights. The original enamels of Luca della

Robbia were somewhat softer in this respect than those of his successors but still embodied this drawback to the most satisfying expression. Had Luca known how to saturate his glaze compounds with elements producing a minute crystallization of the surface which eliminates the glitter he would certainly have turned to this resource with the most unbounded enthusiasm. It is in this development that modern ceramics present a medium surpassing that employed by della Robbia. In modern terra cotta and tile matt as well as bright glazes are freely obtainable and in surface textures of the greatest charm. Added to this are



Altar in Holy Trinity Roman Catholic Church, Newark, executed in polychrome Terra Cotta,  
Mosaic and painted decoration



the very much greater range and variety of colors which the modern ceramic chemist has developed. With this increased facility for harmonious expression the matter of equal or superior results reduces itself to the quality of the architect's design and sculptor's modeling and is not a matter of rediscovering the secret of "a lost art" or of a medium of comparable excellence.

The very much greater range of possibility in ceramics now offered the designer suggests another point very vital to the appropriate and significant use of color in modern applications and one that applies whether the material be ceramics or any medium that may be employed for polychrome design.

Allusion has been made to the ample precedent which exists in the practice not only of the early Italians but of the ancient Greeks. It is natural that in any use of the classical orders, particularly the pure Greek, we should turn to the bright colors and shades of colors employed by the Greeks and apply them in the same way. Any use of the corresponding black, dull and bright reds, blues, brilliant yellow, gold and pure white should hold with

certainly to the method of distribution which modern research has established as characteristic of polychrome expression in Greek architecture. In fact, it is reasonably certain that the use of coloring was so studied and brought to such a state of final perfection in its technique that no departure in the use of corresponding colors could safely be made. But there is this very significant and vital factor to be remembered. Such perfection of color technique must have rested inevitably upon the precise shades in coloring which the chemical knowledge of the ancient Greeks admitted producing. A virile strong race naturally found satisfaction in the use of positive strong colors and

if not indisposed was at any rate unable to develop in the necessary mediums the wide gamut of subtle intermediate variations of color obtainable under the resources of more advanced chemical knowledge. Greek vase painting, for instance, exhibits none of the chromatic variety of ancient Chinese porcelains or Persian tile work nor do we find that the art of glazing their terra cotta extended beyond a process and result that may be more properly described as burnishing. It is an

interesting question what the Greeks would have done had they possessed facilities for the production of ceramic glazes in the wide range of various colors and intermediate shades of colors that exist today. Is it not probable that a race of such wonderful aesthetic sensibility would have quickly seized upon such resources and if their use of colors in relation to form was influenced, as it must have been, by the characteristics of those colors, would they not necessarily have employed the differing colors and shades of a very much wider palette in a different way? One can scarcely conceive that they would not have used them at all and that the only shades they would have employ-

ed were precisely and identically the ones they did. They would have used electric light and changed their fixtures quickly enough if they had known how; and in the use of color who shall say that the road is not open to the modern architect to associate successfully the differing colors admitted by a modern palette with Greek or other classical ornament in a manner which the ancient Greeks would have accepted as perfectly satisfying? The possibility, of course, rests in an imagination gifted enough to do it successfully within the immutable principles which govern form in Greek art.

Correspondingly a slavish adherence to Persian,



Detail of upper stories, Woolworth Building, New York City  
Cass Gilbert, Architect

Color interest focuses mainly in the relation of cream colored Terra Cotta seen against the green and gold copper of main roofs and termination of spire, polychrome accent touches being carried through the Terra Cotta tracery to interlace these masses in the upper stories





Temple B'nai Jeshurun, Newark, N. J.

Albert S. Gottlieb, Architect

An interesting example of the intermingling of burnt clay products of varying textures and color to produce an artistic ensemble.  
Materials, unglazed tile and Terra Cotta in varying shades of brown, with altar of marble



Arabic, or early Italian precedent in the use of color is nowhere enjoined by the facts of history or dictates of sound taste, admitting that in a repetition of any of these motives in design the law of association in mental process calls for a substantial adherence to the familiar chromatic aspects of such design for satisfaction of the mind in its sense of consistency. Beyond that there is no necessary bar to initiative.

A suitable palette of colors for application to architectural form is therefore not limited to any chromatic scale dictated by precedent. It preferably should include those tints and shades which have been employed in the best architecture of the past, but may confidently include varieties and interests of texture not among those known or available in former periods. Modern ceramics already offer these in an astonishing range of very beautiful effects. In fact, the interest of technique occasionally suffers through a control which eliminates much of the charm arising from the more primitive processes employed in early European and Oriental ceramics. On the other hand, the compensating advantage of much broader chromatic scope and extent of application together with the facilities for obtaining material with the requisite speed for modern building operations could hardly be foregone for the satisfactions of more primitive charm. It is only in certain rare effects of luster in Hispano-Moresque and early Italian maiolicas and the superb porcelain glazes of ancient China that the modern ceramist has yet failed to excel technically in his production of material suitable for architectural application. The range of colors obtainable, for instance, in architectural terra cotta is given in the appendix and need not be elaborated here beyond saying that the laboratory formulas of the modern American manufacturer contain an infinite variety

of each one of the colors enumerated in the appendix, in consistent gradations of those which can be supplied commercially and that the range is constantly expanding under further experiment. There is no need for the designer to depart from the obtainable varieties for any effect consistent with the nature of a ceramic medium, the problem in its practical commercial aspect consisting rather in the designer's appreciation of the fact that sumptuous richness can be achieved with a compar-

atively simple range of colors and a consistent employment of the warm and cool varieties of each color. But the attempt should not be made to express these in a working design without reference to ceramic samples illustrating the qualities of coloring resulting from the nature of ceramic process. These, it should also be remembered, occur from the action of chemical compounds subjected to a terrific heat for their development and this precludes microscopic uniformity of shade among the units produced in any one prescribed color. Certain composite colors should also not be expected from the compounding of other colors which



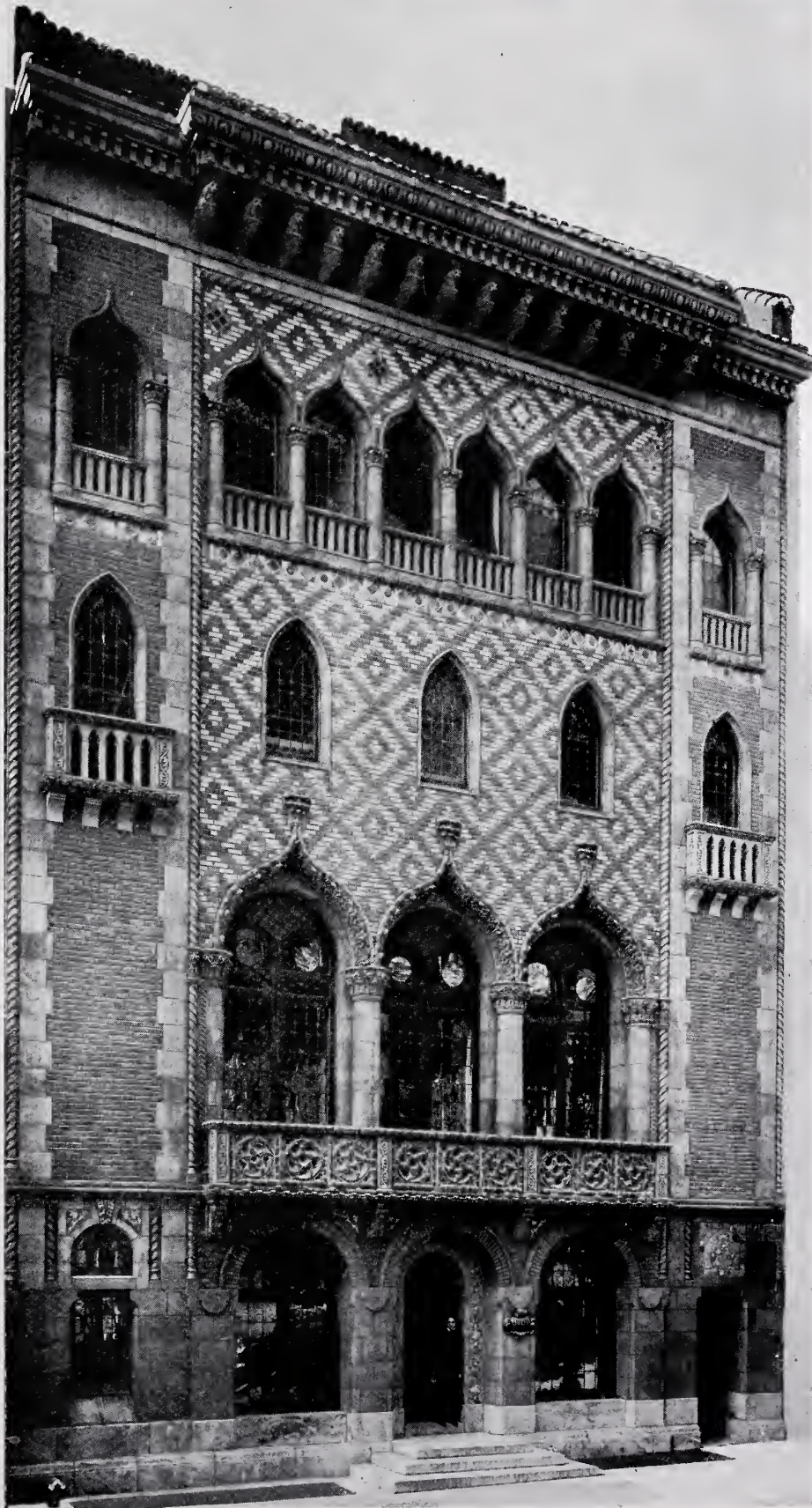
Altar in polychrome Terra Cotta for Holy Trinity Roman Catholic Church, Newark, N. J.

Hughes & Horton, Architects

would yield these in the mixture of ordinary pigments. Distributive applications of one color over another or blending into another with this view, should therefore not be attempted in design without prior consultation with the manufacturer.

Both in tile and terra cotta as well as in the special developments in the latter which are properly known as faience, the color palette offered the architect today is ample for all purposes whose attainment can be reasonably desired. No difficulty exists in this direction where the desire is not to torture out effects of coloring that belong properly to other mediums. It is not reasonable to hand a manufacturer of ceramics a piece of silk and say "match this" or to expect the same duplication from a piece of wall paper, wood,





Wetzel Building, New York City  
Hill & Stout, Architects

This well known example embodies detail treatment well repaying study. Polychrome interest has been closely associated with that of very rich textural charm in the brick and plastic hand made freedom of unglazed Terra Cotta ornament. Varying shades of soft golden brown in these materials are further set off by richly colored polychrome accents in glazed tile. This tile also exhibits the free, hand made quality of early ceramics



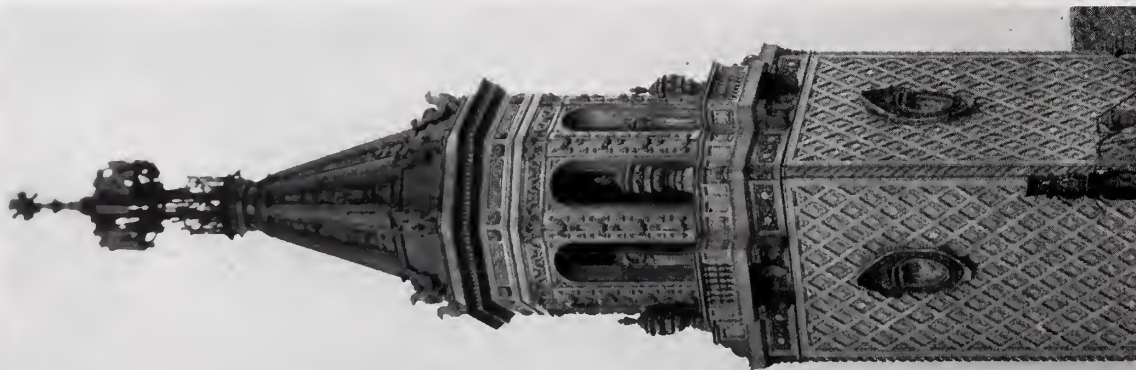


Interior, National Farmers Bank, Owatonna, Minn.

Louis H. Sullivan, Architect

Another striking instance of Mr. Sullivan's work in which ceramics have been employed in a unique manner for interior finish. Capping of screen and enclosure with clock frame in green glazed Terra Cotta above brownish brick against painted polychrome decoration of arch

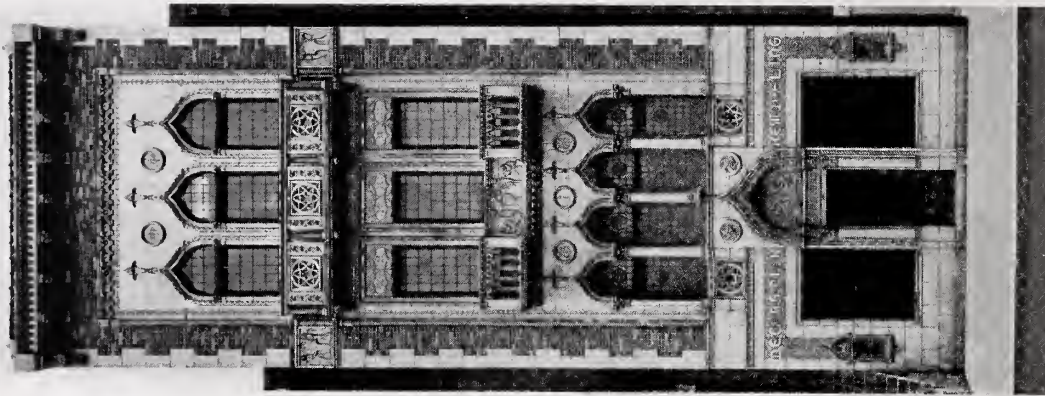
### COLOR IN ARCHITECTURE PART III



Upper portion of tower, Pantages Theatre Building, Kansas City, Missouri

B. Marcus Price, Architect

Positive polychrome treatment of towers has been comparatively rare in this country. From the Central West we have this example in cream enamel and polychrome Terra Cotta indicating a direction in which color can be lavishly and appropriately employed



Building for Joseph F. Sturdy & Company, Chicago, Ill.

Joseph F. Sturdy, Architect

Progress from the brownstone era in color interest and otherwise is well exemplified in this instance of polychrome architecture in brick and Terra Cotta





United States Post Office, St. Petersburg, Florida

James A. Wetmore, Architect

Buildings of this character present unusual opportunity for effective color treatment. This example illustrates the successful adaptation of Italian precedent in a thoroughly modern treatment. Material is ivory Terra Cotta in low relief, enriched with light blue, yellow and green. Ceiling of the loggia is consistently treated in polychrome, blue predominating

stone, marble or other substance when the material to be used is clay and when almost no color presented by any other substance finds a corresponding equivalent as color in the ceramic medium associated with a distinctive quality peculiar to the ceramic medium and constituting its essential dignity. The fact that the producers of ceramics have succeeded in many instances in successfully matching the characteristics of other materials under an enforced demand for this result in nowise changes the fact that the sincere designer will always prefer to use a material frankly for what it is and has ample resources for satisfaction in the profuse variety of effects which modern ceramic production now affords.

A word may be added in this connection respecting the exceedingly interesting possibilities offered by ceramics for pictorial mural decoration. Aside from the beautiful results in Mosaic which are commonly

familiar the possibilities of this in tile treatment are not as well understood as they might be. Demand in this direction has exhibited on the whole a somewhat curious lack of appreciation of the immense dignity of effect obtainable with certain rare exceptions having inclined toward common-

place concepts, and a whole chapter might well be written on this subject which pertains rather to that of interior decoration than the architectural use of color in a broad sense. Faience in the natural medium where particular subtleties in color relationships and technique generally are beyond the customary process in both terra cotta and commercial tile production, involving the use of lower fired glazes and a greater expenditure of hand labor, time and cost than is possible in the bulk production of material for customary building work. The expense is also necessarily greater and the extent of application therefore limited to opportunities relatively unfrequent,



Terra Cotta Filling Station for Atlantic Refining Company, Philadelphia, Pa.

W. J. Wilkins, Architect

While treatment in this instance is monochrome it is easy to visualize buildings of this character in color. Not only does Classic precedent warrant the brilliant enrichment of detail in this style but the purposes of such a structure and the essentially modern activity it is designed to serve admit the widest latitude in the choice of architectural style and play of fancy in chromatic enrichment. With landscape accessories the filling station could be made an attractive beauty spot and an important element in municipal planning



but in the wider use of color which will give our architecture at large a more pronounced and appealing chromatic interest the materials available for use are generally well within the bounds of cost admitted by our prevailing conditions.

Finally it may be said that notwithstanding the rapid strides which our architecture has made away from the lifeless uniformity of the "brown-stone age" the resources for color treatment as they



Interior of court, Pan-American Building, Washington, D. C.

Albert Kelsey and Paul Cret, Architects

One of the loveliest schemes of color for intimate interior use existing in American Architecture, polychrome treatment focusing in the Terra Cotta cornice. Brilliant sienna and orange touches enrich the soft ivory gray of relief and lighter shade of the walls picking up the polychrome interest of the base and the floor which is in ceramic tile of unique design embodying symbolic motives from the prehistoric American civilizations. The tropical plants are an important feature in a color ensemble of the rarest charm

exist in all our native materials have hardly been scratched and that an opportunity of the utmost promise awaits a talent that will make the most of it.

#### APPENDIX

THE following shades of color and characteristics of texture are now obtainable in terra cotta as produced in the United States.

In colored glazes the palette includes reds, ranging from a pale pink to deep madder; blues from a light sky blue to cerulean and deep indigo; greens from light emerald and malachite to grass greens and olive shades; yellows from pale shades suggesting Naples to deep ochres; browns from cafe-

au-lait to dark russet; light and deep purples of both red and blue cast, mauve and, of course, black and white, the latter including several shades from pure white to a deep cream or buff white. Also toned whites of a grayish cast extending into positive grays of a French and putty quality. These are the shades producible at the regular high firing temperatures followed in the manufacture of terra cotta. For certain special effects there are obtainable at an additional cost several other varieties of the colors named which are produced at lower firing temperatures or obtained by additional firings, such as vermilion and gold.

In unglazed terra cotta the ceramic finish is usually in shades of buff, gray, salmon, red and brown. Most of these colors are vitreous. In glazed or enameled terra cotta the finish may be either matt or a bright glassy surface.

Previous to the application of ceramic finish in either glazed or unglazed terra cotta the body of the ware may be given a surface treatment to combine with the color in a desired textural effect. This body surface may be smooth or tooled, in from six to eight lines to the inch, or may take the form of a light or heavy irregular drag or combing. Special surface treatments of a pitted or wavy



Main Entrance, Theology Building, Emory University, Atlanta, Ga.

H. Hornbostel, Architect

character realizing the quality of hand finish are also obtainable although usually at an extra expense.

(Continued on Page 321)





ENTRANCE FRONT

HOUSE OF ELDRIDGE GERRY SNOW, JR., RYE, NEW YORK

DONN BARBER, ARCHITECT

(For floor plans see Pages 327 and 328)









DETAIL, GARDEN FRONT



GARDEN FRONT

HOUSE AND GARDEN OF ELDRIDGE GERRY SNOW, JR., RYE, NEW YORK

DONN BARBER, ARCHITECT









HOUSE AND GARDEN OF ELDRIDGE GERRY SNOW, JR., RYE, NEW YORK

DONN BARBER, ARCHITECT









HOUSE AT OGONTZ, PA.

OSWALD C. HERING AND DOUGLASS FITCH, ARCHITECTS

*(See Page 329 for floor plans)*







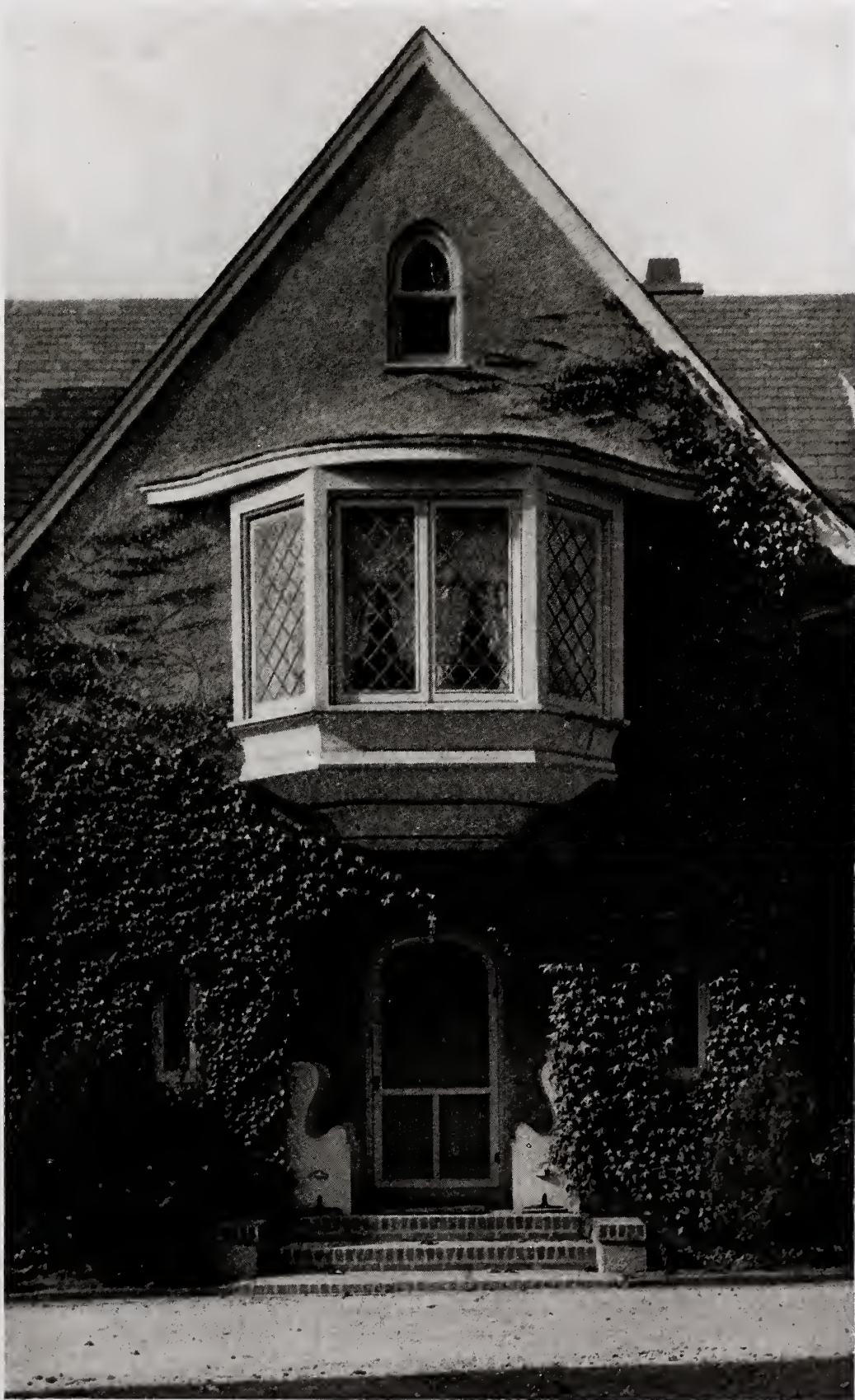


ENTRANCE DETAIL, HOUSE AT OGONTZ, PA.  
OSWALD C. HERING AND DOUGLASS FITCH, ARCHITECTS









DETAIL, HOUSE AT OGONTZ, PA.

OSWALD C. HERING AND DOUGLASS FITCH, ARCHITECTS







HOUSE AT RYDAL, PA.

OSWALD C. HERING AND DOUGLASS FITCH, ARCHITECTS

*See Page 330 for floor plans*







ENTRANCE DETAIL, HOUSE AT RYDAL, PA.

OSWALD C. HERING AND DOUGLASS FITCH, ARCHITECTS







ST. THOMAS NOVITIATE, WASHINGTON, D. C.  
MURPHY & OLMSTED, ARCHITECTS





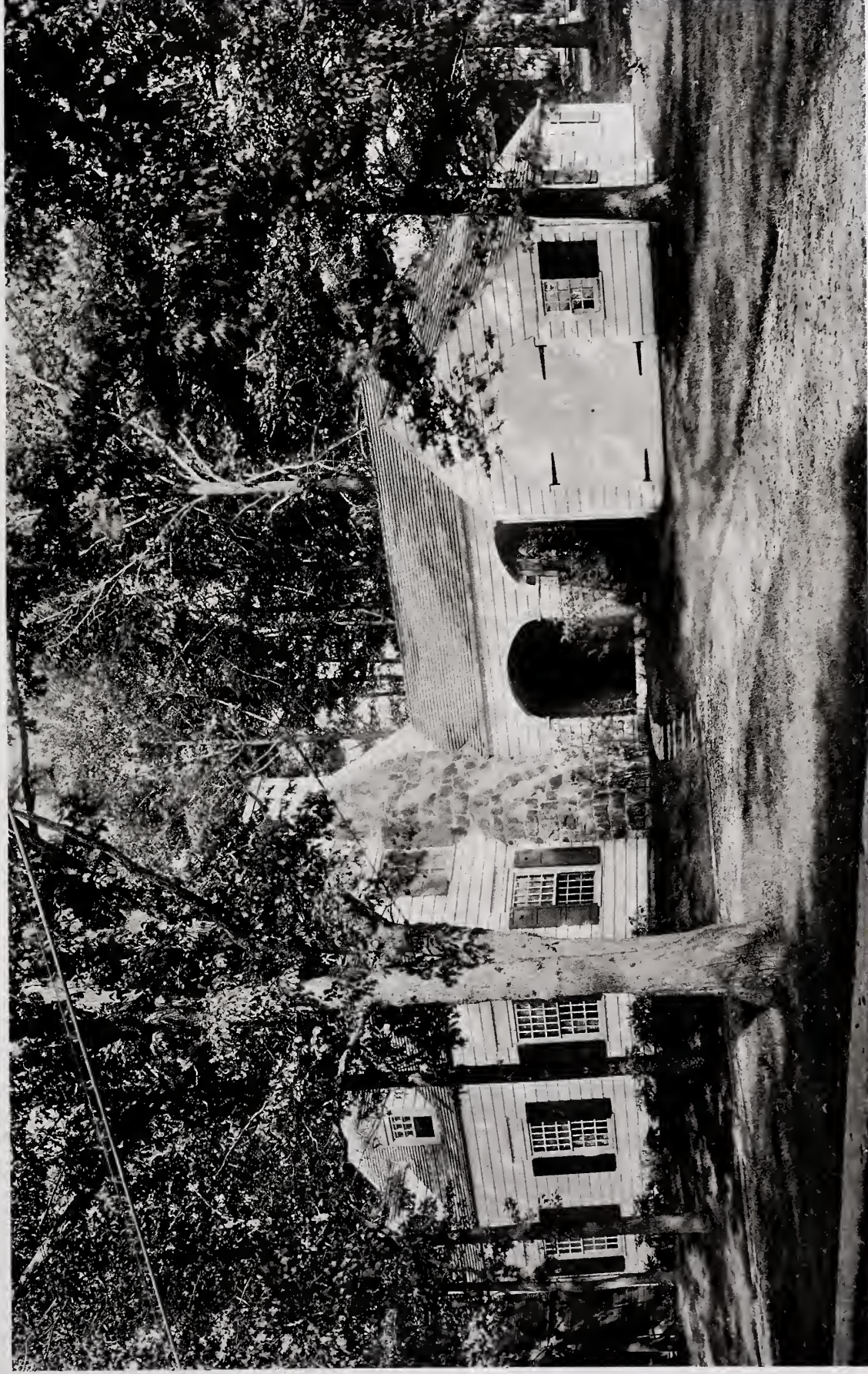


ST. THOMAS NOVITIATE, WASHINGTON, D. C.

MURPHY & OLMSTED, ARCHITECTS







HOUSE OF ROBERT MEARS, ESQ., TENAFLY, N. J.

R. C. HUNTER & BRO., ARCHITECTS

(See Page 331 for floor plans)







COMMERCIAL HIGH SCHOOL, NEW HAVEN, CONN.

BROWN & VON BEREN, ARCHITECTS

(See Page 332 for floor plans)





# EDITORIAL COMMENT

UNDOUBTEDLY THERE IS better appreciation of good art in this country now than there was twenty-five years ago. The development of our architecture has been steady and consistent. The small houses being erected today are artistically better than were the pretentious houses in the 70's and 80's. People are learning to "live up" to their environment and are making their homes as artistic as their purses will permit. They buy the best they can afford, but unfortunately that best, while often sold for good prices, is not to be compared with the cheaper and more artistic articles that one may purchase abroad. The reason lies solely in the fact that Europe is developing her craftsmen, while in this country we are practically not doing so. We need to encourage the artisan and, first of all, we must provide proper schools under competent teachers for the development of craftsmen.

Now, the man of moderate means must depend on the atrocities of art that are to be found in department stores. This junk mostly takes the form of parodies of some accepted original, designed and made by manufacturers who absolutely know nothing of good craftsmanship. Homes in this country are full of it.

Original work by competent craftsmen is, in this country, expensive and may only be had by those with large purses. Good replicas can be had at fair prices, but, unfortunately, those who make those things first set out to reduce cost of production by simplifying as far as possible such features that are costly to produce, or ignorantly adding such, to them alone, decorative features that create a burlesque of the original.

If we developed the highest craftsmanship, such development will have to proceed by endowment from rich patrons. The cost of the slowly produced articles, made by hand, laboriously and patiently manufactured, is too high for any except the rich. What the average person may have are good replicas, and not so-called copies.

In educating the public taste in good craftsmanship, we shall first have to get to work on the department stores and the many so-called "art shops." It is often quoted that those in charge of our theatres and other amusements succeed by "giving the people what they want." The result of catering to a want that has not even the semblance of refinement or mental uplift is apparent. Stores everywhere sell or "stock" the things the public will most readily buy. Obviously, it will be difficult to get the retailer to experiment in new things of better craftsmanship. It is there that those who are directing their energies toward

the development of artistic taste in the masses must work.

Modern furniture design is not always artistically good and much of it is vulgar and commonplace. Museums throughout the country are engaged in developing good craftsmanship. This effort proves the practical value of museums, and may point with satisfaction to the interest taken by manufacturers in this museum work. But, it does not help the cause of good craftsmanship any to find that in copying a good "museum piece" the copyist has so little knowledge of good art that the very elements that gave this piece its artistic value, have all been lost in reproduction.

The craftsman who sells his work to rich amateurs can look out for himself. He knows he must live up to the highest ideals of his craft. It is the ignorant manufacturer and the equally ignorant distributor that should engage the attention of those who are so earnestly striving to forward good craftsmanship in this country.

Fortunately, craftsmanship as allied to architecture has a brighter future. It will be perfectly safe to give architects what they want and it will be difficult to foist upon them something they do not want. There has been a large advance in the last two decades in architectural craftsmanship. Structural details are constantly improving for the good reason that the more important details are designed by architects or developed under their supervision.

Of course, the general public has not the artistic appreciation that is part of the training of architects. As the public has no voice in the design and manufacture of the work of the craftsmen that is offered to them, obviously some influence must be brought to bear on the manufacturer who is making money by giving people what they want and at the same time sadly retarding the development of artistic perception.

\* \* \*

THE ADMIRABLE PLAN for furthering the professional education of those employed in the architectural offices of Boston, perfected by the Education Committee of the Boston Society of Architects, was outlined in a circular setting forth the details and printed on page 299 of our issue of September 27. Nothing could be finer. The successful results from such valuable and efficient combination of effort are practically assured at the outset.

That Harvard and Technology Schools of Architecture have reached a point where they receive the unqualified approval of Boston archi-

teets, proves that the educational methods at these distinguished schools are progressive and practical. If further proof were needed, the fact of the fine co-operation with the Atelier of the Boston Architectural Club is presented. This trio of educational units when co-operating with the entire profession in Boston, presents an opportunity to the student of architecture such as has never before been possible in this country. It carries forward the architectural education of every student for a period of at least five years after graduation. At the end of that time, he will have become so thoroughly grounded as to enable him to take his place among the "elder brothers" absolutely qualified for such advanced association.

Such a scheme can be applied and successfully carried forward in all our large cities, and the excellent example of the men of Boston will, it is hoped, be an inspiration in every large architectural educational center.

Whether consciously or unconsciously, we do not know, but the Boston Society of Architects has sent out this information to the press in a manner that secures its prompt presentation. The circular needs no editing and it is printed on one side of each sheet. Editors have only to mark and send to their printers, and are pleased to have such excellent matter for their readers.

The Committee on Public Information of the Institute will find in this circular and its method of preparation a model that can be advantageously followed.

\* \* \*

**D**URING RECENT YEARS architectural exhibitions have clearly shown the value of the artistically made photograph as a means of exhibiting works of architecture. Here and there, throughout the country are to be found men of considerable artistic ability who have taken up photography and dignified it to a point of art. These men, born with correct ideas of good composition, and with a correctly developed appreciation for good art, lack only the power to co-ordinate the hand with the eye to become artists. They find in the camera a means of expressing the artistic yearnings which beset them. Their work is entitled to the respect of every one who desires to encourage good craftsmanship. It is essential that the craftsmanship of architectural photog-

raphy should become more highly developed, and it is the architect who can, to a great extent, promote that development.

In a recent trip covering many large cities of the middle West, the writer many times heard the complaint that while there was a wealth of material, ready and ripe for illustration, unfortunately there were no local photographers who were sufficiently artistically trained to photograph it. This lack of photographer craftsmen deterred many architectural clubs from holding exhibitions, or contributing as group exhibitors to the larger architectural exhibitions East and West.

Many a man today unsuccessfully practicing architecture, and from one cause or another unable to gain a livelihood, would, by reason of his architectural training plus a knowledge of modern methods of photography, find a very dignified and lucrative calling as an architectural photographer. The field is large, for we know by actual experience that the competent architectural photographers in this country can be counted on the fingers of two hands.

We have in mind a certain city in the middle West, where architects have been doing important work in building up the city. It is several years since any record of this growth has been made in architectural journals. We spent considerable time going about and were amazed that no pictorial record had been made. Without exception we were told that the reason for this omission was due to the fact that there was not available a photographer with sufficient artistic knowledge properly to photograph the buildings.

Architects are passively indifferent to this condition. Like every artist the great interest is in the work then on the easel. But, if we are to hold successful architectural exhibitions, shows that will thoroughly record the architectural development of every section, we must be able to command a wider selection of subjects than is now possible.

Why might not the Institute or the chapters take up this matter, do what they can to encourage excellence in photographic work? Why not issue "letters patent" to photographers, stating that their work has passed the critical scrutiny of the Institute? And why not at each major exhibition give a medal to that photographer or firm of photographers whose work justifies such an award?



## Color in Architecture—Part III

(Continued from Page 318)

The term polychrome when prefixed to terra cotta usually denotes the application of two or more colors to the single piece. It is important that the parts to be treated in this manner be clearly indicated on drawings as the expense is higher than execution in a single shade of color for each unit.

## BIBLIOGRAPHY

THE following does not aim to give all of the works which have been written upon the phenomena of color and the principles of its application in the various arts. Practical value for purposes of study requires that selection should be confined to a few comprehensive works of more immediate assistance to the architect and which are readily obtainable by purchase or can be found in American public libraries. Casual articles which have appeared from time to time in periodicals have been excluded under the probable difficulty of obtaining back numbers.

Adams, Edward: *The Polychromatic Ornament of Italy*. Published by G. W. McKissoon, London, Wiley & Putnam, New York. Containing colored plates from the author's drawings with explanatory text.

Chevreul, Michel Eugene: *The Principles of Harmony and Contrast of Colors and Their Application to the Arts*. Translated from the French by Charles Martel. Published by Longmans, Brown, Green & Longmans, London. Illustrated with many cuts and colored plates. An exhaustive

and complete study of the nature and phenomena of colors and their relation.

Chevreul, Michel Eugene: *Exposé d'un Moyen de Définir et DeNommer Les Couleurs*. Published by Didot Freres et Fils, Paris. An atlas of colored plates with brief explanatory text in French.

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(To be continued)



Dancing—Terra Cotta Frieze Panel, Boston Opera House  
Bela Pratt, Sculptor—Wheelwright & Haven, Architects





PROPOSED BUILDING FOR THE YOUNG MEN'S CHRISTIAN ASSOCIATION, JERSEY CITY, NEW JERSEY --  
JOHN F. JACKSON, ARCHITECT, NEW YORK.

## OFFICE SKETCHES IN PENCIL BY JOHN F. JACKSON, ARCHITECT, OF ROOMS AND DETAILS OF Y. M. C. A. BUILDING, JERSEY CITY, N. J.

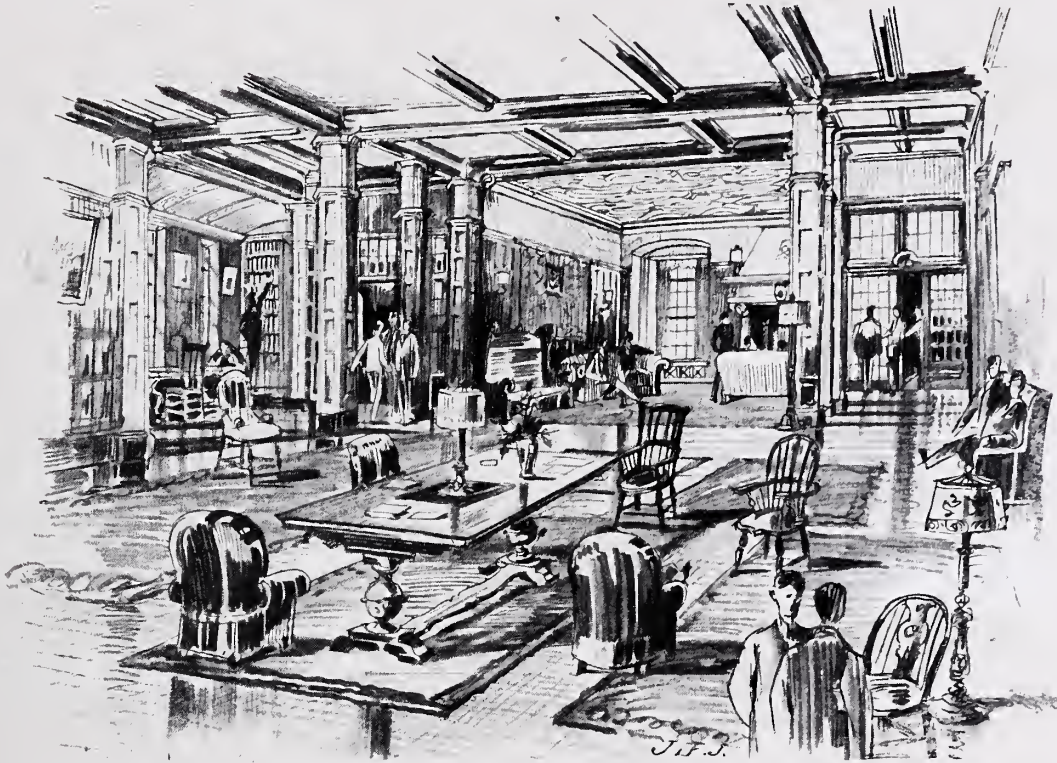
THE sketches reproduced on this and following pages are presented by permission of Mr. John F. Jackson, the architect who made them.

They show a finely developed artistic ability, a perfect knowledge of the medium employed, and emphasize the large value attached to sketching by architects. They were not made for exhibition purposes, but merely to convey to the building committee, and incidentally to those whose generous contributions made the building possible, exactly how the structure and its various rooms would look on completion. The superiority of these sketches over the usual architectural eleva-

tions and plans, in accomplishing this purpose, is easily apparent.

It is unfortunate that during recent years the encouragement of the development of sketching has been neglected. Possibly the extended use of the hand camera is responsible, but it should be borne in mind that the camera can only reproduce existing objects. It is not possible to photograph an idea. The student or draftsman who fails to develop a facility for free hand sketching, will find a serious handicap in his professional career, and deprive himself of an artistic and attractive method of interesting clients in the work he is undertaking for them.





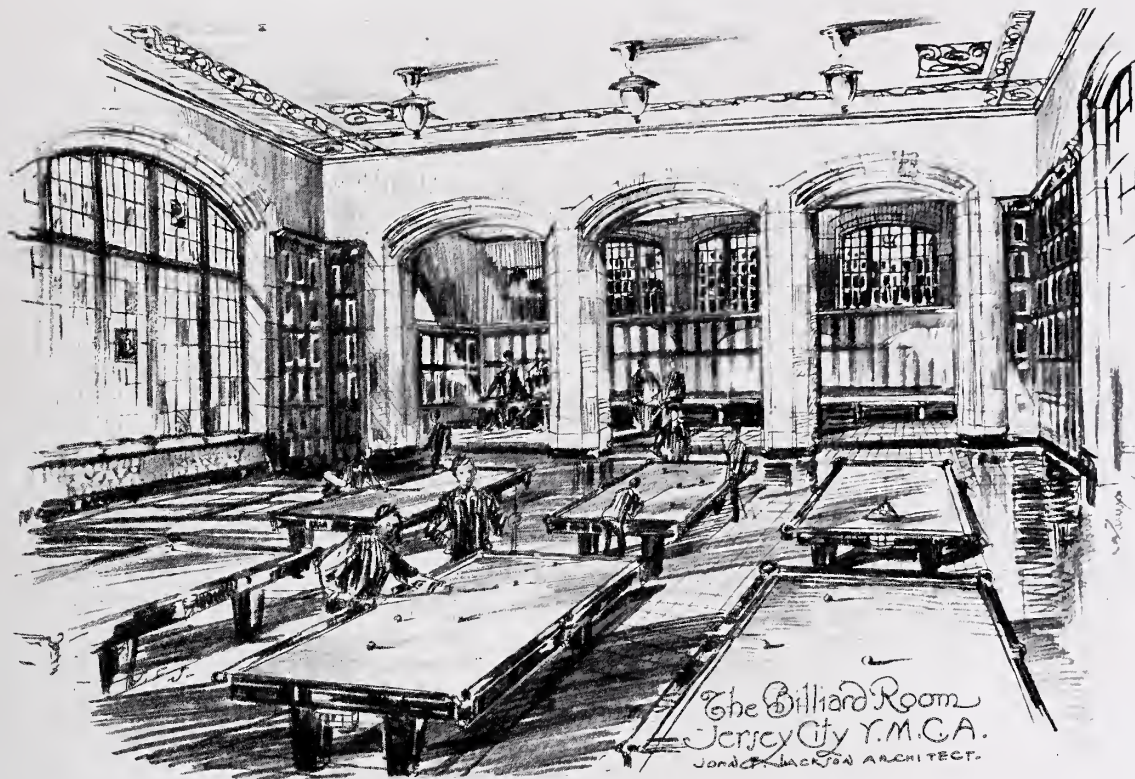
Office sketches in pencil  
of various rooms and de-  
tails of Y. M. C. A.  
Building, Jersey City, N. J.

By John F. Jackson.  
Architect







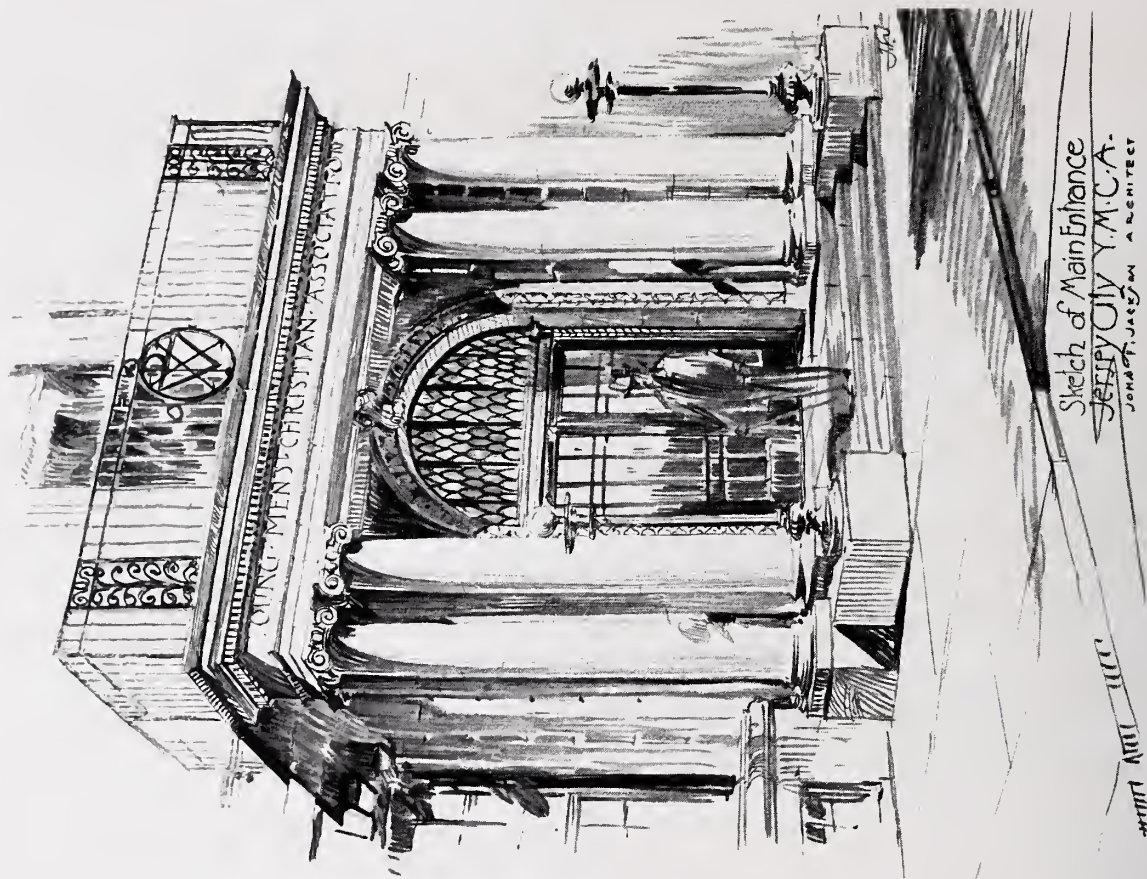
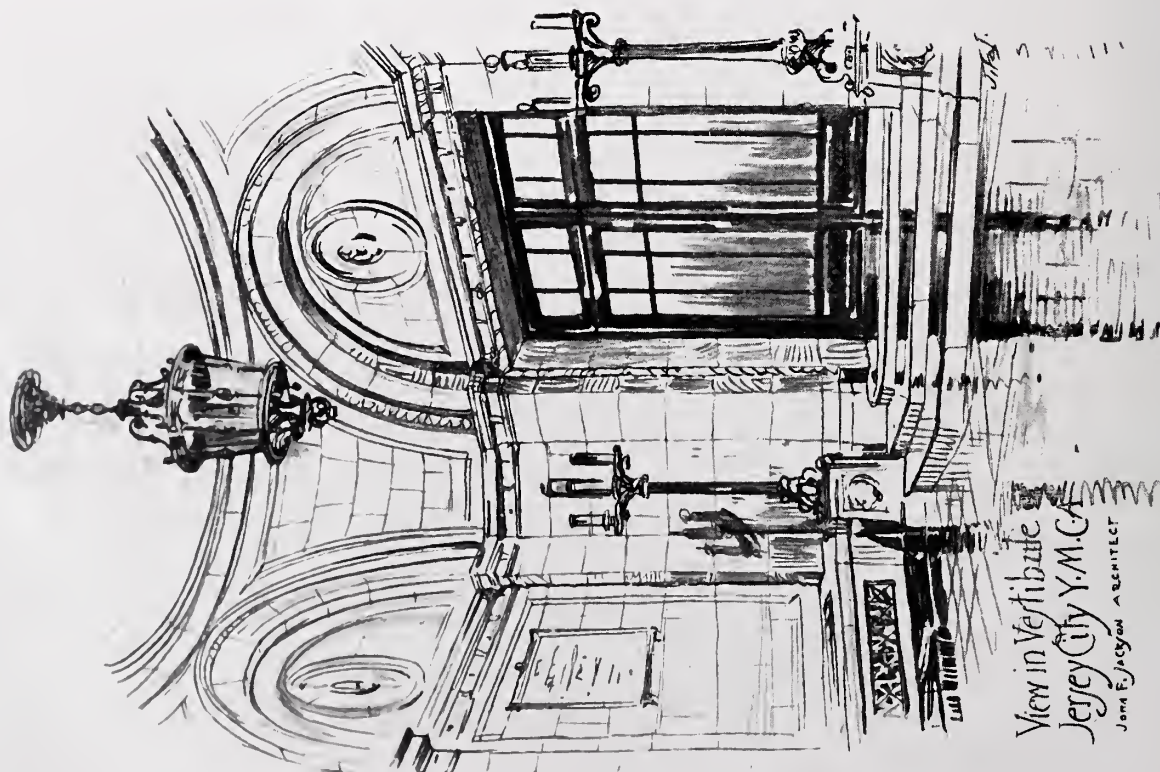


Office sketches in pencil  
of various rooms and de-  
tails of Y. M. C. A.  
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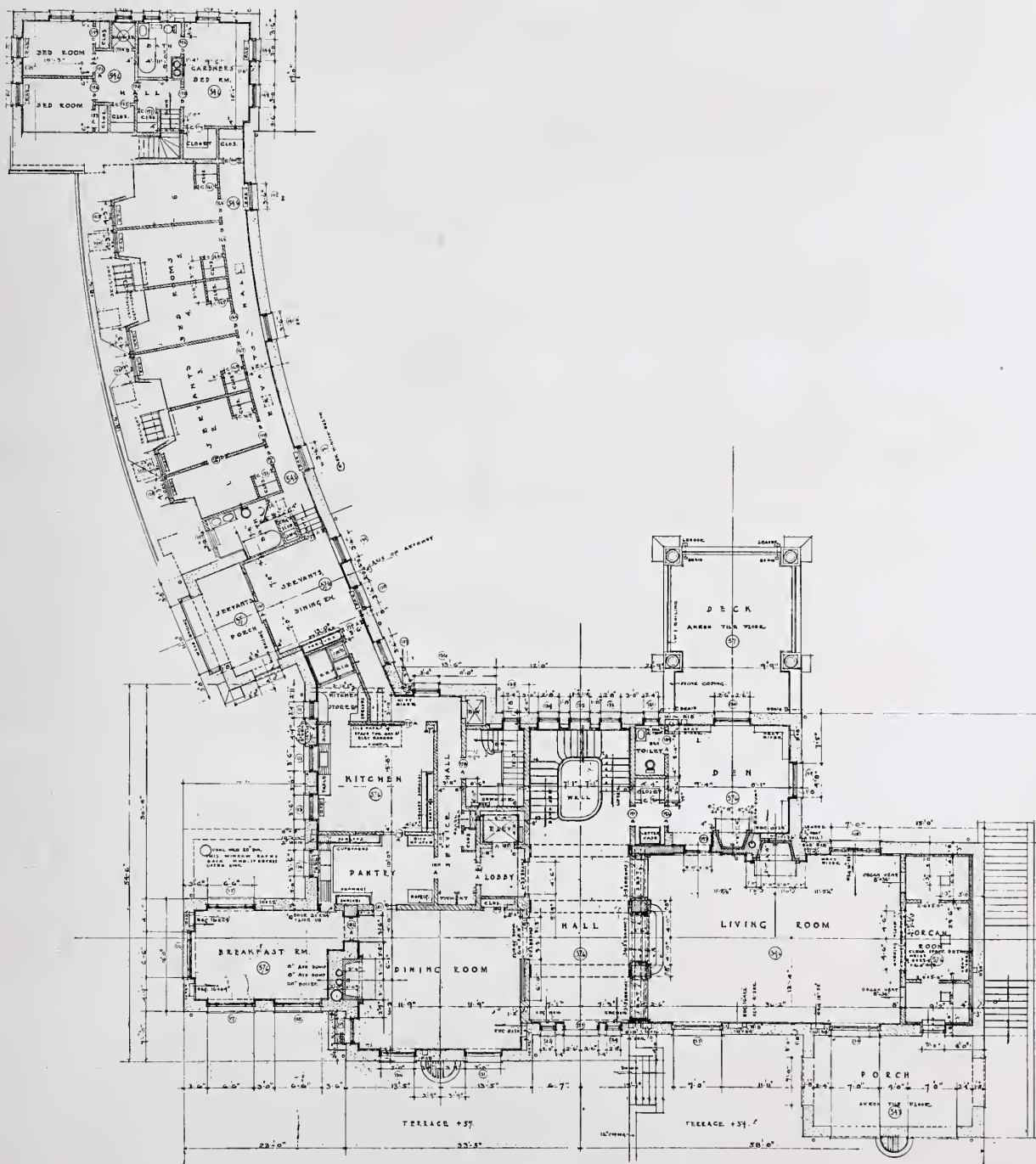






Office sketches in pencil of various rooms and details of Y. M. C. A. Building, Jersey City, N. J.  
By John F. Jackson, Architect



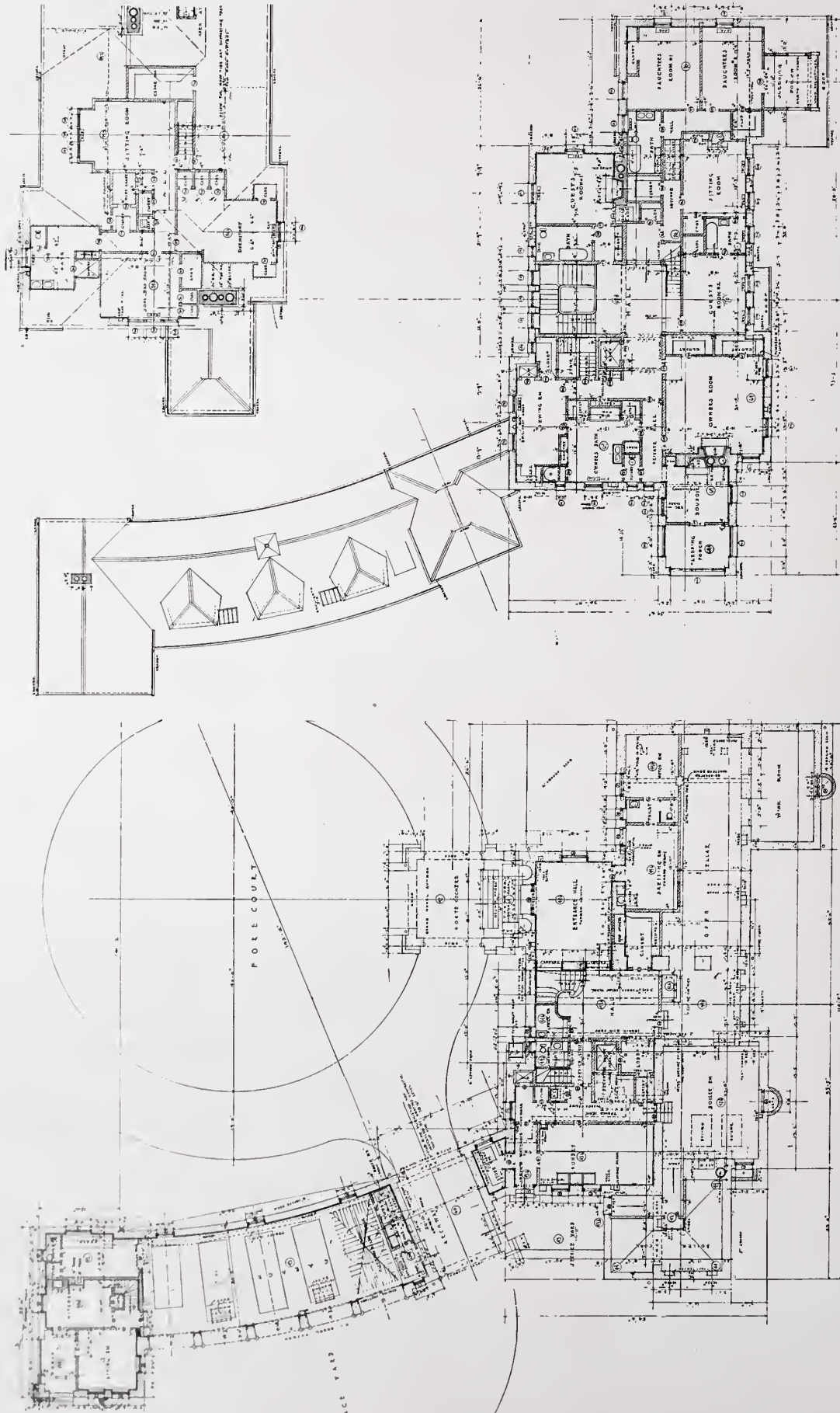


FIRST FLOOR PLAN

HOUSE OF ELDRIDGE GERRY SNOW, JR., RYE, NEW YORK

DONN BARBER, ARCHITECT

(For illustrations of this house see Plate Section)



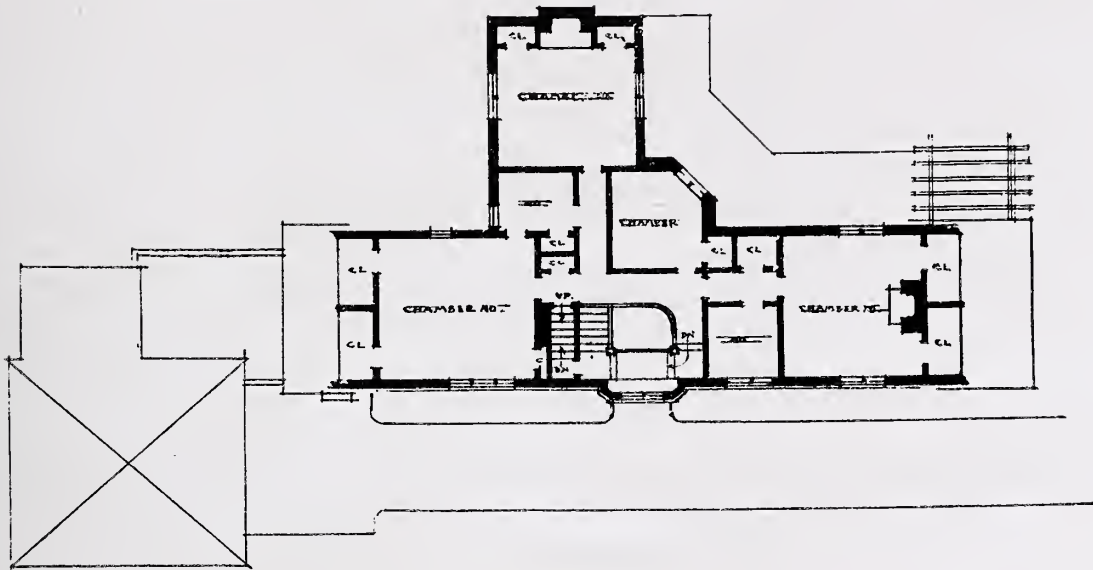
SECOND FLOOR PLAN

BASEMENT PLAN

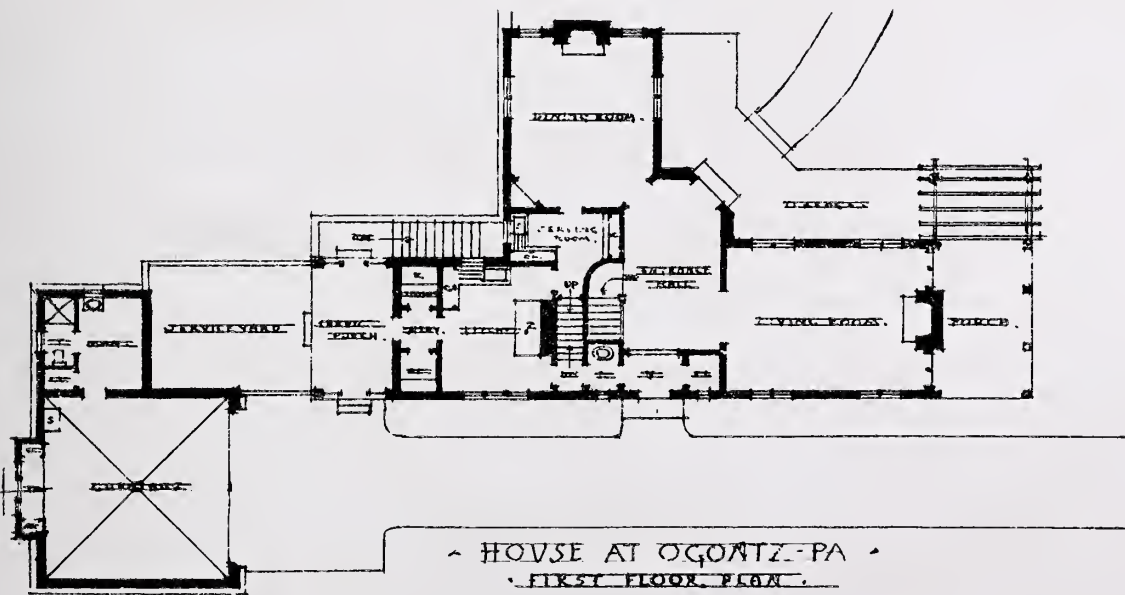
HOUSE OF ELDRIDGE GERRY SNOW, JR., RYE, NEW YORK

DONN BARBER, ARCHITECT





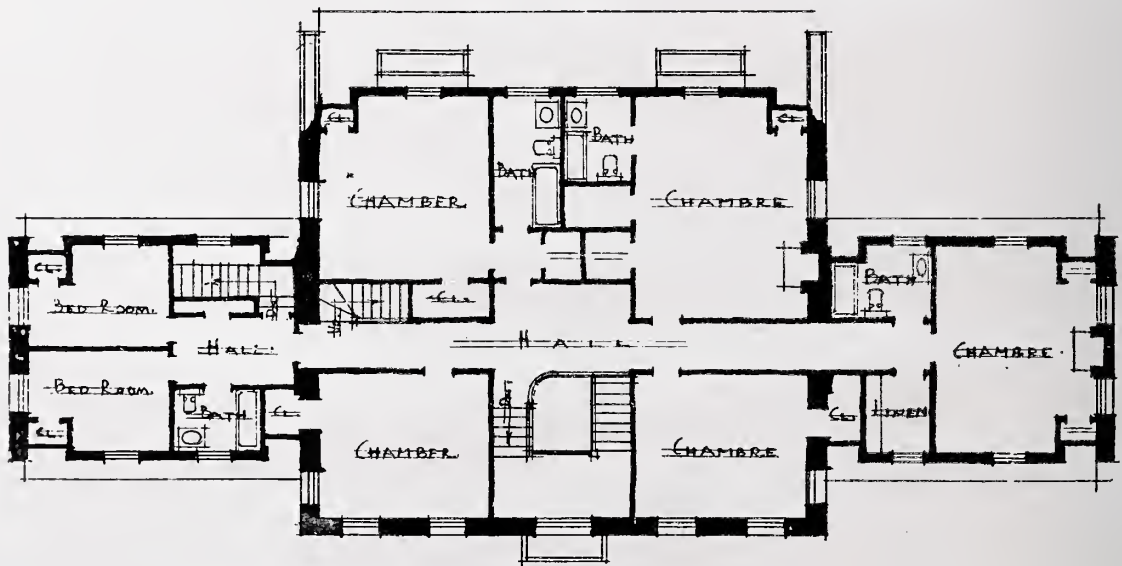
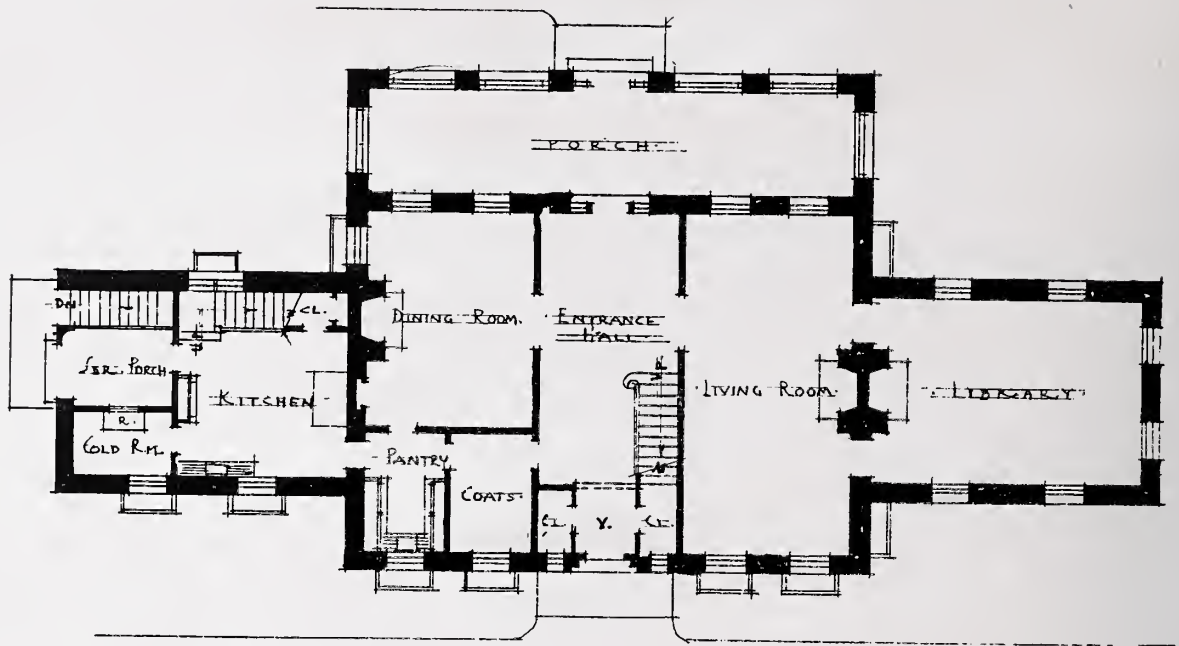
SECOND FLOOR PLAN



HOUSE AT OGOATZ - PA  
FIRST FLOOR PLAN

OSWALD C. HERING AND DOUGLASS FITCH, ARCHITECTS

(For illustrations of this house see Plate Section)

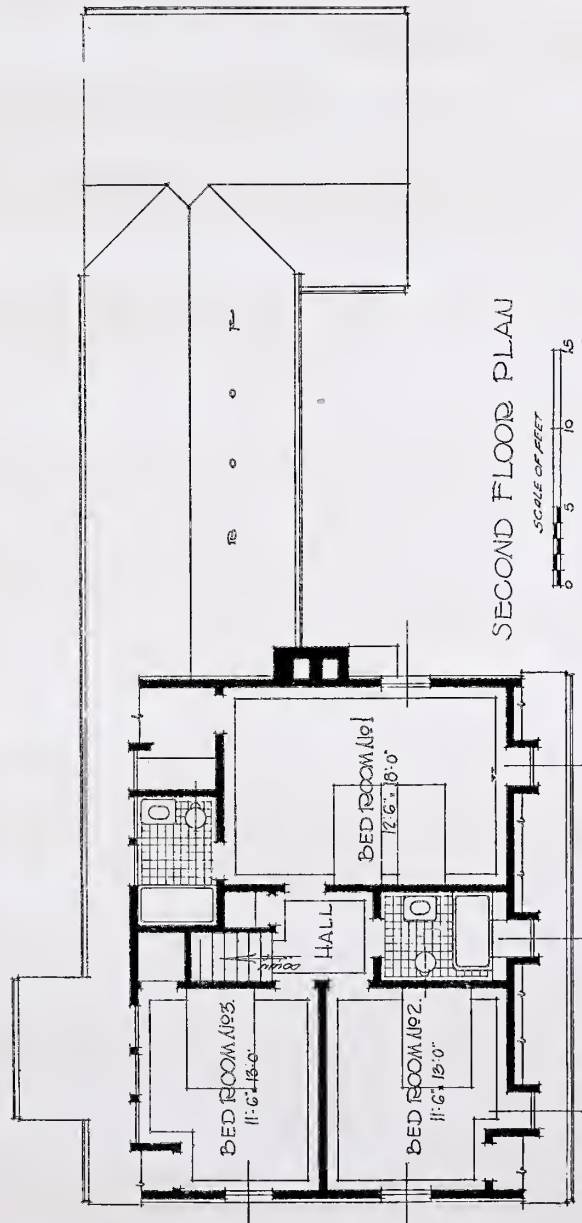
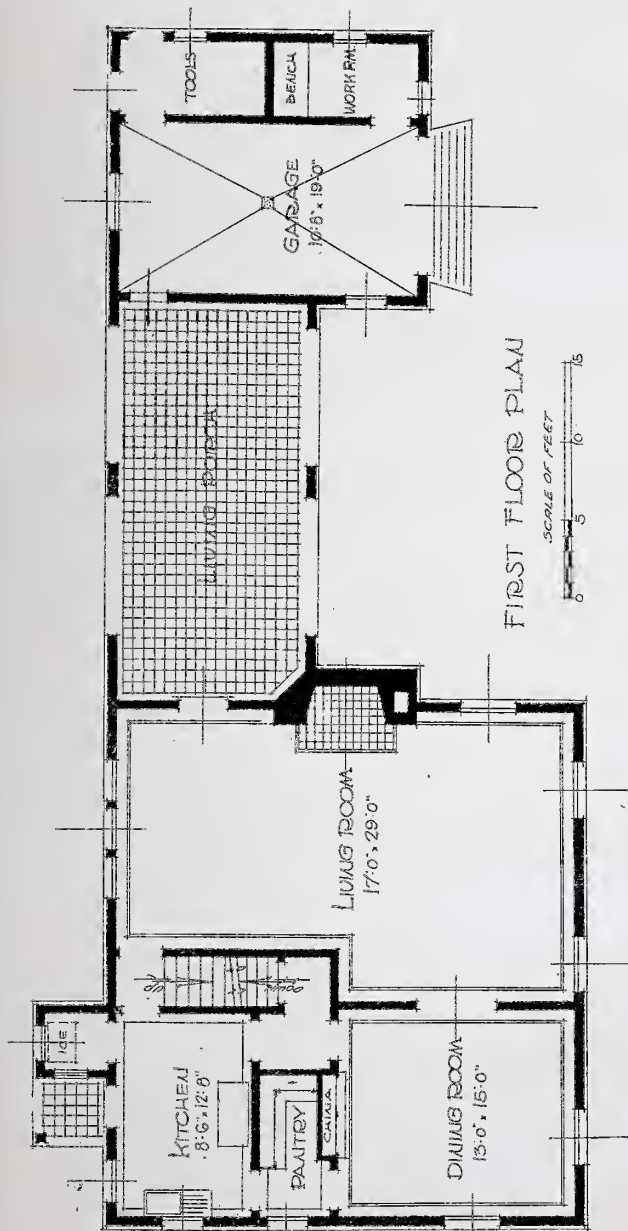


FIRST AND SECOND FLOOR PLANS, HOUSE AT RYDAL, PA.

OSWALD C. HERING AND DOUGLASS FITCH, ARCHITECTS

(For illustrations of this house see Plate Section)

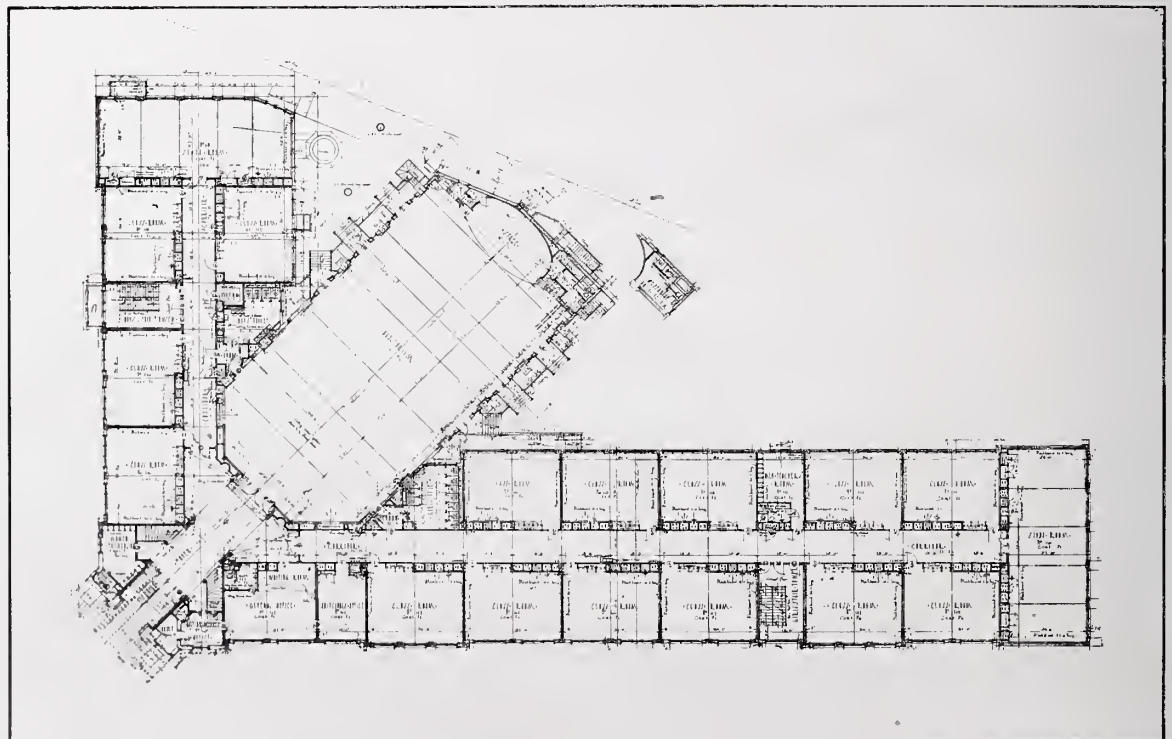
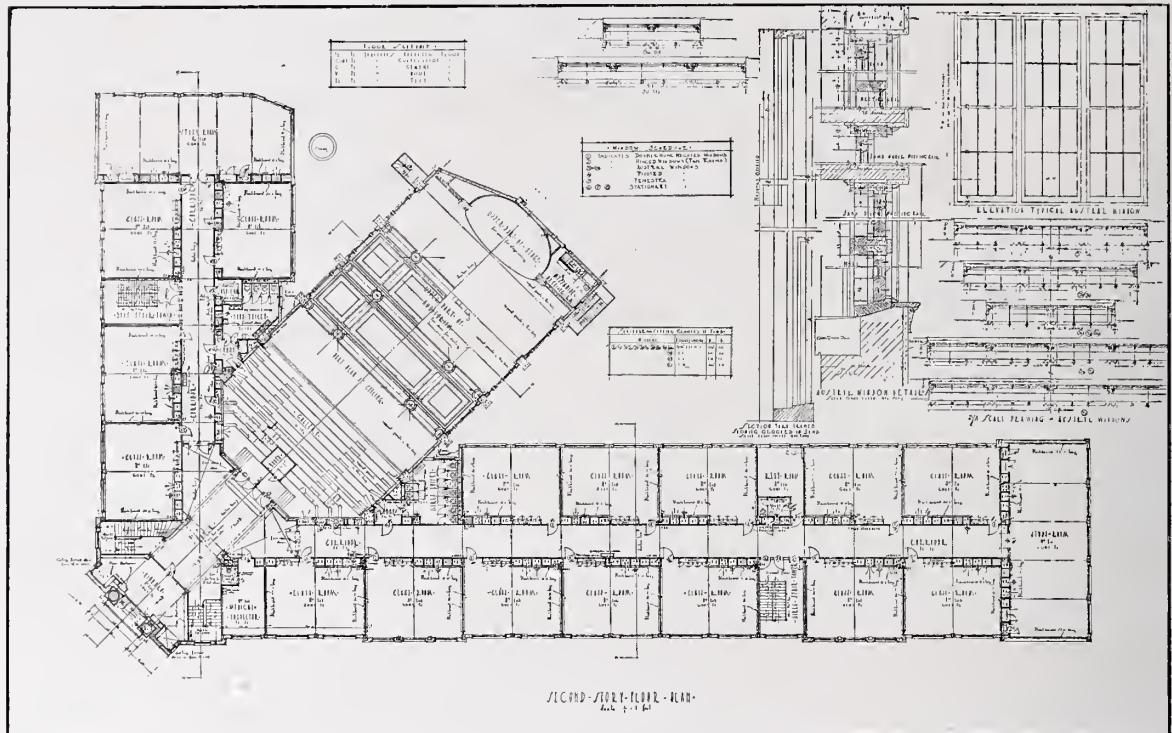




HOUSE OF ROBERT MEARS, ESQ., TENAFLY, N. J.

R. C. HUNTER & BRO., ARCHITECTS

(For illustrations of this house see Plate Section)



FIRST AND SECOND FLOOR PLANS  
COMMERCIAL HIGH SCHOOL, NEW HAVEN, CONN.  
BROWN & VON BEREN, ARCHITECTS

(For illustrations of this school see Plate Section)



# DEPARTMENT OF ARCHITECTURAL ENGINEERING

## RECENT DEVELOPMENTS IN WARM AIR FURNACE HEATING\*

BY F. R. STILL, Mem. Am. Soc. H. & V. E.

SOME years ago the furnace manufacturers formed an organization known as the *National Warm Air Heating & Ventilating Association*. In 1918 this association entered into an agreement with the University of Illinois to have the latter conduct experiments on warm air furnaces. The University has rendered three reports in bulletin form known as Nos. 112, 117 and 120. The last report, which was presented to the meeting of the association at Cleveland, April 19-20, 1922, has not yet been published. The work so far completed at the University has made available a wealth of valuable data which never before was obtainable. With this data in hand it is now possible to calculate the size and performance of a furnace with about the same degree of accuracy as the size and performance of a steam or hot water boiler can be determined. The unfortunate part, however, is that very few of those who have access to the reports know how to make practical use of the data given in them and these reports have been confined almost entirely to the members of the furnace manufacturers' association, who have made no effort to see that they are distributed among their agents and dealers so that they should take advantage of their practical value should they be so inclined.

Like our own Society, this association has a Warm Air Furnace Code Committee which has been struggling long and arduously in an endeavor to reconcile all the elements so as to get them to agree on a standard code. This committee submitted a report at the last meeting and a code was adopted. It is not perfect any more than was the first report on the boiler code, which was submitted to our Society, but it is a step in the right direction, is founded on the right principles and can be modified and amended at sub-

sequent meetings. Beyond a doubt it will eventually be perfected when all the members of the association become more familiar with it and understand the benefits to be derived from having a standard which is followed by everybody.

The formula adopted in the code for determining the size of the leaders, or pipes from the furnace to the various flues and registers was devised by P. J. Dougherty, engineer of the International Heater Co., a member of our Society and also on the Research Committee of the association referred to previously. It is very simple and is based on experimental engineering data taken from the report issued by the University of Illinois. It has been checked by application to certain test problems covering quite a wide range of capacities and it has been found accurate, conservative and reliable.

The rule proposed by Mr. Dougherty is based on the following:

Outside temperature zero deg. fahr.  
Inside temperature 70 deg. fahr.  
Heat loss per hour per  
sq. ft. of exposed  
wall surface of ordinary frame construction. . 25 B.t.u. ( $0.36 \times 70 = 25.2$  B.t.u.)

Heat loss per sq. ft. of  
glass per hour  
..... 83 B.t.u. ( $1.18 \times 70 = 82.6$  B.t.u.)

Heat loss per cu. ft. air  
space in a room, allowing one air change per hour  
1.25 B.t.u. ( $0.075 \times 0.238 \times 70 = 1.25$  B.t.u.)

If 1000 is divided by each of the factors, the result will give the square feet of wall surface, the

\* Paper presented at the Semi-Annual Meeting of American Society of Heating and Ventilating Engineers, Buffalo and Detroit, June, 1922.

square feet of glass surface, and the cubic feet of space, respectively, to equal 1000 B.t.u. loss per hour.

For example,

$$\frac{1000}{25} = 40 \text{ sq. ft. of wall surface per M.B.t.u.}$$

$$\frac{1000}{83} = 12 \text{ sq. ft. of glass surface per M.B.t.u.}$$

$$\frac{1000}{1.25} = 800 \text{ cu. ft. of space in a room per M.B.t.u.}$$

Suppose a room 10 x 12 ft. and 9 ft. high, has 2 windows, each about 16 sq. ft. area. If two of the 10 ft. walls have outside exposure and only one of the 12 ft. walls is so exposed, then the wall exposure will be 10 x 9 x 2 ft., or 180 sq. ft., plus 12 x 9 ft., or 108 sq. ft. which equals 288 sq. ft. Subtracting 32 sq. ft. for the 2 windows, leaves a net wall area of 256 sq. ft. A room 10 x 12 x 9 ft. contains 1080 cu. ft. of space.

By dividing each of these quantities by their corresponding factors, as shown above, the result will be the heat units required in thousands; all three should be added together to get the total heat required for the room. This can be stated more clearly as follows:

$$\frac{256}{40} + \frac{32}{12} + \frac{1080}{800} = 10.41 \text{ or } 10,410 \text{ B.t.u.}$$

In order to determine what size the leader or pipe should be from the furnace to this room, consult Fig. 1, which is a duplication of the chart given on page 24 of Bulletin No. 120, published by the University of Illinois, and it is found that at a temperature of about 195 deg. there were obtained 125 heat units per sq. in. of leader per hour to the first story. Hence dividing 1,000 by 125 will give us 8 sq. in. per 1,000 heat units.

Therefore  $10.4 \times 8 = 83.28$  sq. in. area of pipes or leaders to the room if it is on the first floor. This is about the area of a pipe 10 in. in diameter.

If the same temperature of 195 deg. is assumed for determining the second and third story pipes

or leaders, the area of them should be respectively 5 sq. in. to the second story and 4 sq. in. to the third story, per thousand heat units exposure. Thus, for a similar room on the second floor, the area of the pipes would be 52 sq. in. or an 8 in. diameter pipe to the second story, and 41.64 sq. in. or a 7 in. diameter pipe to the third story.

It was decided by the Committee to allow 6 sq. in. to the second story, and 5 sq. in. to the third story, which is equivalent to a temperature of about 176 deg. Thus, the pipe to the second story would be 9 in. diameter, and to the third story 8 in. diameter. Undoubtedly, the code will be amended so as to provide for a lower temperature to the first story, the same as has been provided for the second and third. This will mean allowing 9 sq. in. per thousand heat units, or 93.6 sq. in. in the leader pipe, or 11 in. diameter instead of 10 in. as the present code provides in the foregoing example.

Reducing the allowable temperature from 195 deg. to 176 deg. evidently increases the area of the leaders to the first story more than 20 per cent above what is now the average practice, but it will avoid the necessity for maintaining such high

temperatures to get sufficient heat, will be conducive to economy, and will avoid so many unsatisfactory plants.

In everyday practice when calculating the size of the leaders to the various rooms in the building, one would proceed about as follows:

$$\begin{aligned} \text{Wall } 10 \text{ ft.} + 10 \text{ ft.} + 12 \text{ ft.} \times 9 \text{ ft.} &= 288 \text{ sq. ft.} \\ \text{Glass } 16 \text{ sq. ft.} \times 2 &= 32 \text{ sq. ft.} = G. \end{aligned}$$

$$\begin{aligned} \text{Net wall surface} &= 256 \text{ sq. ft.} = W. \\ 10 \text{ ft.} \times 12 \text{ ft.} \times 9 \text{ ft.} &= 1080 \text{ cu. ft. space} = C. \\ C = 1080 \div 800 &= 1.35 \text{ M.B.t.u.} \\ W = 256 \div 40 &= 6.40 \text{ M.B.t.u.} \\ G = 32 \div 12 &= 2.66 \text{ M.B.t.u.} \end{aligned}$$

(Heat units in thousands)

$$\begin{aligned} 10.41 \times 8 &= 83.28 \text{ sq. in.} = 10 \text{ in. dia. 1st floor} \\ 10.41 \times 6 &= 62.46 \text{ sq. in.} = 9 \text{ in. dia. 2nd floor} \\ 10.41 \times 5 &= 52.05 \text{ sq. in.} = 8 \text{ in. dia. 3rd floor} \end{aligned}$$

Should it be the reader's opinion that an air change  $1\frac{1}{2}$  times per hr. should be provided for, instead of 1 air change per hour, then substitute

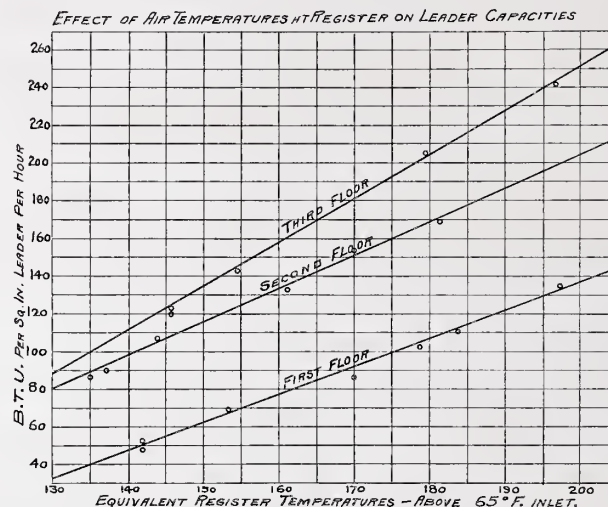


Fig. 1. Chart for determining leader pipe sizes



600 in place of the factor 800; or if it is thought that 2 air changes per hour should be allowed because of unusual exposure to high winds, or the frequent opening of doors, or because of poor construction, then use 400 in place of 800.

It is seldom that a contractor will undertake to connect a leader from a furnace to a sun-room and agree to heat it to the same comfortable temperature as any other room in the house. This is probably due to two reasons, one being that the sun-room usually is at a very considerable distance from the furnace and the other reason is due to the unsatisfactory results he has obtained in his efforts to heat such a room. This latter has likely been caused by the fact that he has never realized that fully one-third more capacity would be required in the leader pipes than would be required for a similar room of usual construction.

As an example; consider a room of the same size as in the previous case, but one that has 160 sq. ft. of glass instead of 32 sq. ft. as before, and owing to this large glass exposure 2 air changes per hour will have to be provided for; the size of the leaders would then be as follows:

$$\begin{array}{rcl}
 \text{Total wall surface} & = & 288 \text{ sq. ft.} \\
 \text{Total glass surface} & = & 160 \text{ sq. ft.} \\
 \hline
 \text{Net wall surface} & = & 128 \text{ sq. ft.} \\
 \text{Cu. ft. space} & = & 1080 \\
 1080 \div 400 & = & 2.70 \\
 128 \div 40 & = & 3.20 \\
 160 \div 12 & = & 13.33 \\
 \hline
 19.23 \times 8 & = & 153.84 \text{ sq. in.} = 14 \text{ in. dia. pipe} \\
 19.23 \times 6 & = & 115.38 \text{ sq. in.} = 12 \text{ in. dia. pipe} \\
 19.23 \times 5 & = & 96.15 \text{ sq. in.} = 11 \text{ in. dia. pipe}
 \end{array}$$

It will be noted that the area of the leaders is almost double the size required in the previous instance.

#### NEED FOR INCREASED WALL STACK SIZES

One phase of the furnace business, which has not yet been reported on by the University, but which has a very important bearing on the satisfactory operation of furnaces, is the size of the flues in the walls for conveying the heat to the upper stories. The Code Committee made practically no recommendations on this point at all.

The average wall in houses heated by furnaces is framed with studs known commercially as 2 x 4's; they are more often 1 $\frac{7}{8}$  in. x 3 $\frac{3}{4}$  in. and are usually spaced 16 in. centers. Thus the maximum space for a sheet metal flue is 3 $\frac{3}{4}$  in. x 14 $\frac{1}{2}$  in.; therefore, it is hardly practical to figure on a flue being more than 3 $\frac{1}{2}$  in. deep x 13 $\frac{3}{4}$  in. wide and experience shows the standard maximum width to be about 13 in.

A round pipe offering the same friction for the same capacity as a rectangular duct of the above

dimensions, would be 7 $\frac{1}{8}$  in. in diameter or it would have an equivalent area of 40 sq. in., whereas it has an actual area of 48.25 sq. in. Many are the instances where an 8 in. or a 9 in. leader is carried from the furnace to a riser of no greater dimensions than above mentioned, which only has the carrying capacity of a 7 in. round pipe. It is no wonder that it is so often difficult to heat rooms in the upper stories of buildings under these circumstances.

The way to overcome this, is to insist that all walls carrying warm air flues are to be built of studs not less than 2 in. x 6 in. spaced 20 in. centers. If 6 in. studs are used in such partitions or walls, even though the studs are set 16 in. centers, which is unnecessary, then a flue measuring 5 $\frac{1}{2}$  x 13 in. could be built which is equivalent to 8 $\frac{1}{4}$  in. diameter pipe. When the studs are spaced 20 in. centers then a flue 5 $\frac{1}{2}$  x 17 in. can be built in, which is equivalent to a round pipe 10 in. diameter in carrying capacity.

In Bulletin No. 120, issued by the University of Illinois, is a chart on page 21 which is herein reproduced in Fig. 2. By means of this chart the size of the furnace can be readily determined, also the amount of the fuel to be burned, the draft necessary to burn that amount of fuel, the maximum temperature attainable, the heating capacity and the overall efficiency.

As previously stated, the code as adopted, makes it necessary to carry a temperature of 195 deg. in order that the required amount of heat is supplied to first story rooms, when the leaders are determined by allowing only 8 sq. in. of area to each 1,000 heat units of exposure in the building.

Comparing the effect this high temperature has, as compared with what would be the result if only 176 deg. had to be attained, it is found that the rate of combustion must be 6.75 lb. of coal per sq. ft. of grate surface per hour. This will necessitate a draft of 0.085 in. The heating capacity of the furnace is 140,000 B.t.u. per hour, and the overall efficiency will be 56 per cent.

At 176 deg., the rate of combustion will be only 5.5 lb. per sq. ft. of grate surface per hour. The draft need only be 0.07 in.; the heating capacity is 120,000 B.t.u. per hour and the overall efficiency will be increased to 60 per cent.

Assume a house has a total exposure of 120,000 B.t.u. and compare the operating results at the two temperatures, first determining the requirements for 195 deg.

$$\begin{array}{rcl}
 120,000 & & \\
 \hline
 0.56 \times 12,000 \times 6.75 & = & 2.66 \text{ sq. ft. of grate surface, or } 22.10 \text{ in. diameter.}
 \end{array}$$

Heating 1 lb. of air from 65 deg. to 195 deg., or through 130 deg. will require 31 heat units; therefore, 120,000 heat units exposure will require 3,870 lb. of air per hour or about

860 cu. ft. per minute at 70 deg. temperature.

For 176 deg. temperature the following results are obtained:

$$\frac{120,000}{0.60 \times 12,000 \times 5.5} = 3.03 \text{ sq. ft. of grate surface, or } 23.6 \text{ in. diameter.}$$

Heating one pound of air from 65 deg. to 176 deg., or through 111 deg., will require 26.4 heat units; thus, 4,550 lb. of air per hour must be heated, or about 1,000 cu. ft. of air per minute.

In the first case the coal burned will amount to 17.86 lb. per hour; in the second, 16  $\frac{2}{3}$  lb. per hour. From this it will be noted that the rate of combustion is about 23 per cent higher to get the high temperature, and the coal consumed to give off the same amount of heat is 7 per cent more.

The volume of air at high temperature is less by about 14 per cent, hence smaller pipes are required. The grate area is about 7 per cent more for the lower temperature; in other words, the furnace having a larger grate surface would proportionately have more heating surface; thus, the same transmission could be effected at lower temperatures, by the circulation of more air, requiring less coal and still have a reserve capacity for quick heating by running the temperature up higher, which would not be possible with the smaller outfit, which is already working at about its maximum capacity.

At Urbana it was found that by making the return air duct to the furnace the same size, or even larger than the combined area of all the leaders, and at the same time avoiding abrupt or right angle turns in this duct, that the capacity of the furnace can be increased as much as 50 per cent. It was further demonstrated that the furnace is affected much more by any restriction to the flow of air in the recirculating duct, than by a similar restriction in the leaders from the furnace to the registers.

One frequently finds installations where there are two or more recirculating ducts leading back to one furnace. This generally fails to give as good results as one duct. It is perfectly obvious why this should be so. For example, one duct 32 in. dia., has about 8 per cent less area than would two 23 in. ducts, yet the total circumference of the two 23 in. pipes is 44 per cent more than the one 32 in. pipe; hence, for a similar length the two pipes present 44 per cent more frictional surface.

One frequently settles on the area to have and because it may be easier to install, uses a rectangular duct instead of a round one. At Urbana there was an opening 17 x 47  $\frac{1}{2}$  in. behind a register face, with a right angle elbow to a vertical riser of the same dimensions, the lower end of which connected to a horizontal duct 12 x 67 in., the

opposite end of which was attached to the base of the furnace. This is indicated in Fig. 3 as shown by A at the left. The modified recirculating duct is indicated by B on the right.

Both of the above ducts are exactly the area of a 32 in. round pipe, but the drop leg is only equal to a pipe 30.6 in. in diameter as a conductor of air, owing to the shape of it, and the horizontal leg is only equal to a pipe 29.2 in. diameter for the same reason. In other words, the latter can only convey 83 per cent of the air that a 32 in. round pipe will convey because of the additional friction, when both have the same pressure head. Besides this, the right angle elbow alone presents an amount of resistance equal to 12 ft.

of straight pipe 17 x 47  $\frac{1}{2}$  in. in size, and the right angle at the base will add as much more. In view of all this, is it surprising that the capacity of a furnace can be increased 50 per cent by a few changes in the recirculating duct? Hardly anyone would knowingly set out to install a recirculating duct measuring 17 x 47  $\frac{1}{2}$  in. that would be nearly 50 ft. in length with a standard register face on the opposite end of it. He would at least

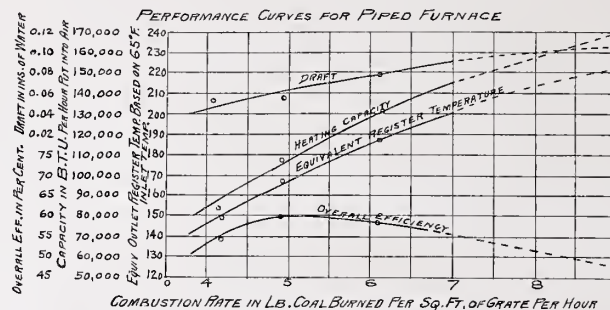


Fig. 2. This chart will give furnace size, fuel and draft needed, temperature attainable, heating capacity and overall efficiency

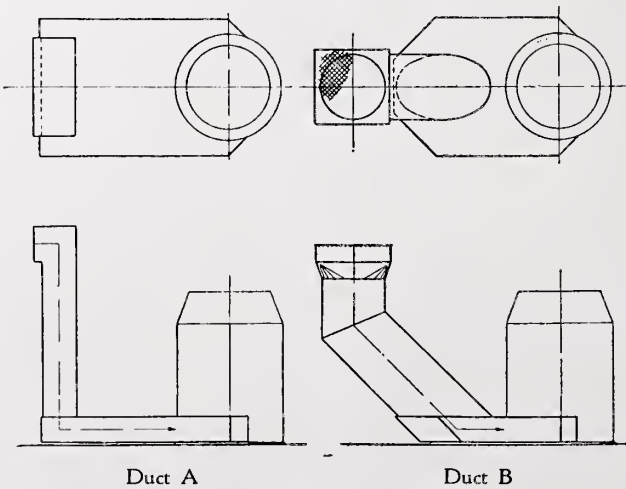


Fig. 3. Two types of recirculating ducts



feel very uncertain of the results he would get, yet that is exactly what the resistance amounts to in the installation as it was first put in Urbana and it was in no way unusual, as it is being unconsciously done every day. The restrictions in the recirculating duct and the limited area of the flues in the walls are accountable for many of the poor re-

sults obtained from furnace installations. That a furnace fails to perform satisfactorily is by no means an accident. When one knows what its limitations are and then sees what is sometimes attempted, it seems like an accident if a furnace works at all.

(To be continued)

## PAINT PROTECTION FOR WOOD

BY CORNELIUS T. MYERS, M. Am. Soc. M. E.

*THE literature on paint as a protective coating for iron and steel is extensive. Paint for wood has been such a commonplace affair for centuries that a mild shock is experienced when a consulting engineer in the year 1922 calmly states that there is a crying need for information on the proper composition of paint as a protective coating for wood. The following paper is reprinted by permission from the August 1922 issue of Mechanical Engineering, the Journal of the American Society of Mechanical Engineers.—Editors.*

**A**BOUT two years ago the writer, in carrying on some research work on wood wheels had occasion to make inquiry among paint manufacturers as to the value of various kinds of paints and primers for the protection of wood against moisture. This inquiry brought out so many differences and variations in opinion as to paint materials and mixture proportions that a more extensive inquiry among paint men was started. This inquiry revealed that:

- (1) There was comparatively little technical information to be gained from the paint industry on the relative protective values of different coatings for wood
- (2) The paint industry did not generally recognize the moisture-proofing of wood as a problem, but was concentrating so far as the more reputable manufacturers were concerned on producing paints that would last as long as possible on the surface to which they were applied. In other words, such improvements as have been made have contributed to the life of the coating rather than the life and usefulness of the article which received the coat.

As the demand upon our forests depends to a very considerable extent upon the life of forest products, and as the life of these products in many cases depends to a very considerable extent upon

the protection against moisture they receive, the intimate knowledge of protective coatings is a factor of great importance in our lumber conservation program; to say nothing of the possible saving in our \$300,000,000 annual paint bill. Wood in its natural green condition has a very limited use as a structural material. Its tiny fibres are cellular in form and contain a large amount of moisture, commonly known as sap, the sap being water containing very small percentages of tannins, sugars, gums and coloring matters. To give wood the physical qualities which make it fit for use in buildings, furniture, truck bodies, wheels, etc., it is necessary to remove most of the moisture.

### MOISTURE IN WOOD

Wood is said to be oven-dry when continued oven drying causes no further loss of weight. In their green state the woods used structurally have a moisture content of 60 to 120 per cent of their oven-dry weight, and weigh roughly from 60 to 120 per cent more than when they are in an oven-dry state. In other words, 35 to 55 per cent of the weight of a green log is water. In the green log this water exists in two conditions:

- (1) Minute particles of water in each tiny wood cell cavity, known as "free water"
- (2) The moisture absorbed by the fibrous material which forms the walls of the cells, known as "hygroscopic moisture."

Felled wood exposed to average atmospheric conditions gradually dries, the air taking up its moisture. First the cell cavities slowly give up their moisture. This evaporation goes on until the cell cavities are emptied of the minute particles of "free water" they contain. All that remains is the moisture actually absorbed by the fibres of the cell walls, which are still saturated with the "hygroscopic moisture." Wood in this state is said to be at its "fibre-saturation point." Up to this time the wood does not appreciably change in size

or in physical characteristics except as to weight, which of course decreases considerably as it will now contain but 25 to 30 per cent of moisture instead of 60 to 120 per cent.

Further drying of the wood is necessary in order to increase its strength and hardness, increase its durability, enable it to take and hold paint, and in general to improve its condition for the purpose intended. As this drying progresses beyond the fibre-saturation point, the cell walls give up the moisture they have absorbed, and in so doing they shrink and harden. Under natural conditions this drying process will continue until the amount of moisture in the wood bears a quite definite relation to the average humidity condition in the particular locality. (See Fig. 1.) In the eastern and north central states, for instance, the moisture content of wood will become stabilized somewhere in the neighborhood of 14 per cent for what is known as thoroughly air-dried stock. In the arid, southwestern states it will contain a still lower percentage, while in the former war zone of France the wood will normally contain considerably more than 14 per cent of moisture. Of course unpainted wood that is exposed to rain and snow will absorb considerably more than 14 per cent, depending upon the dimensions of the piece and the extent of the exposure.

Data secured from the Forest Products Laboratory of the United States Department of Agriculture show that

- (1) Many woods should be dried to about 8 per cent moisture content to give the best results as to strength, durability, hardness and finish (See Table 1.)
- (2) It is also true that if after being dried, and shrinking in the process, wood reabsorbs moisture, it will swell again according to the amount absorbed
- (3) The shrinking and swelling along the

grain, perpendicular to the grain and tangential to the grain all differ, and very materially, for a given change in moisture content. (See Table 2.)

From the two following tables it will be seen that it is quite desirable to have wood thoroughly dried, and that steps should be taken to keep it so. But although it is easy to reduce the moisture to 8 per cent in dry kilns, it is difficult to maintain

the wood at this point; because of unsuitable protective coatings, or processes, and because of the lack of knowledge as to relative ability of various coatings for really stabilizing the moisture content within a small range.

#### PROTECTIVENESS OF PAINT

While we know that several coats of good paint may give adequate protection for floors, truck bodies, furniture, wheels or other wooden articles, we by no means know what paints give the best protection or what paints will give fairly satisfactory protection for the least money. The test fences, where many different paints were exposed to the same atmospheric conditions, have given some data on the durability of paints, but very little data on the durability of the painted article or its dimension-

al stability. In durability and dimensional stabilization we are greatly interested; in the first for very obvious reasons, in the second because wooden structures, furniture, etc., are more durable, serviceable, and can be made more simply if their various component parts do not expand and contract with changing weather conditions. The cost of drying could be reduced in many cases, if when dried to a certain point the moisture content could be stabilized. Wood, on account of its very valuable characteristics, could be used in places where metal now seems necessary. A dozen or more prominent concerns in the paint industry have been co-operating very commendably in this research work, realizing that the dimensional stabilization of wood by moisture-

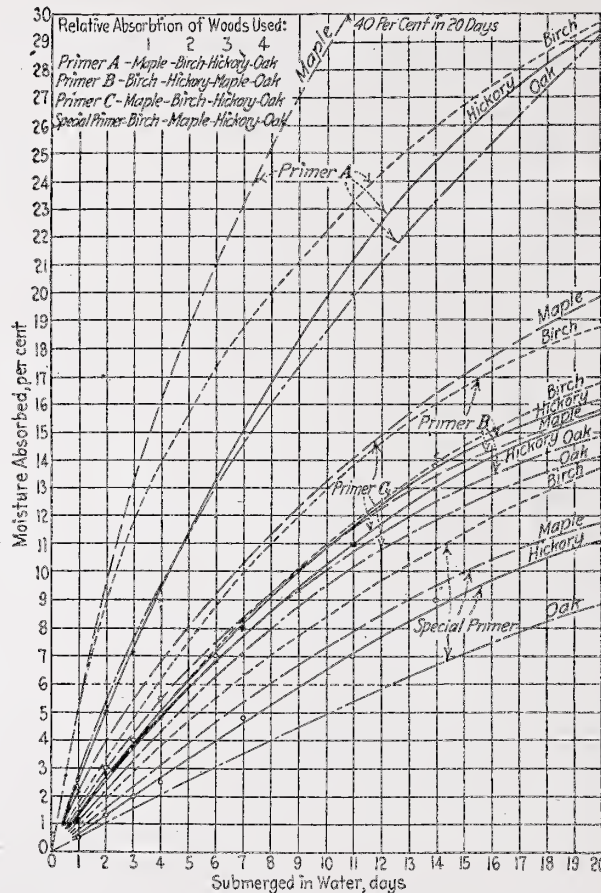


Fig. 1. Relation Between the Amount of Moisture Absorbed by Wood and the Average Relative Humidity



proofing was a proper function of paint and of world wide importance. There is, however, quite a difference of opinion among these manufacturers as to what materials should be used, and how they should be mixed and applied. During the war the Forest Products Laboratory investigated the moisture-proofing effects of linseed oil and various paints, varnishes and leaf-metal coatings as applied to airplane-propellers and other airplane parts made of wood, but this work has not been broadened because of lack of funds.

TABLE 1. APPROXIMATE PERCENTAGE OF INCREASE IN STRENGTH OVER GREEN<sup>1</sup>

	Dried to 14 Per Cent Moisture	Dried to 8 Per Cent Moisture
Bending strength, modulus of rupture .....	40 to 60	80 to 100
Compression parallel to grain..	80 to 90	100 to 150
Compression perpendicular to grain .....	65 to 75	
Stiffness, modulus of elasticity	20 to 30	25 to 35 <sup>2</sup>
Hardness .....	30 to 35	40 to 50 <sup>2</sup>
Shearing strength, parallel to grain .....	40 to 50	60 to 70 <sup>2</sup>

<sup>1</sup> Compiled from Data given in Timber, Its Strength, Seasoning and Grading by H. S. Betts.

<sup>2</sup> Estimated.

TABLE 2. SHRINKAGE AND MOISTURE CONTENT OF HARDWOOD<sup>1</sup>

Specific Gravity of Dry Wood	Shrinkage <sup>2</sup> in Per Cent of Green from Green to Oven-Dry		Green Moist in Per Cent of Dry Wood
	Radial	Tangential	Wt.
Ash, white <sup>3</sup> .. 0.57	4.8	7.0	39
Birch, yellow <sup>3</sup> 0.55	7.4	8.9	68
Elm, cork .. 0.57	4.8	8.1	53
Hickory <sup>4</sup> ... 0.64	7.2	10.9	60
Maple <sup>5</sup> ..... 0.51	4.2	8.5	63
Oak, red <sup>5</sup> ... 0.56	3.9	8.3	83
Oak, White <sup>5</sup> . 0.60	5.3	8.8	66
Average .... 0.57	5.4	8.6	62

<sup>1</sup> Compiled from data given in Kiln Drying of Lumber by H. D. Tiemann

<sup>2</sup> Average shrinkage along the grain, up and down as the tree grows, is only about ½ per cent

<sup>3</sup> Average of 2 species

<sup>4</sup> Average of 9 species

<sup>5</sup> Average of 3 species

In order to get some comparative data on the paints and primers now on the market, the following schedule was drawn up by the writer, and tests were made on small pieces, measuring 1 × 1 × 1 in., of hickory, oak, birch and maple by several well known paint concerns:

- (1) Dry slowly and completely until pieces cease to lose weight
- (2) Determine "oven-dry" weight
- (3) Allow reabsorption to 8 per cent
- (4) First coating to be applied at 8 per cent moisture content
- (5) Second coating to be applied at 8 per cent moisture content

- (6) Third coating to be applied at 8 per cent moisture content

Note: 24 hours to elapse between 4 and 5, and 5 and 6.

- (7) Allow the three coatings to dry for a week under conditions of 70 to 80 deg. fahr. temperature, 40 per cent relative humidity, under which condition the moisture content of the wood should remain at 8 per cent even if the wood had no protective coating

- (8) Label and weigh for base weight at 8 per cent moisture content with protective coating

- (9) Submerge in water at 70 deg. fahr.

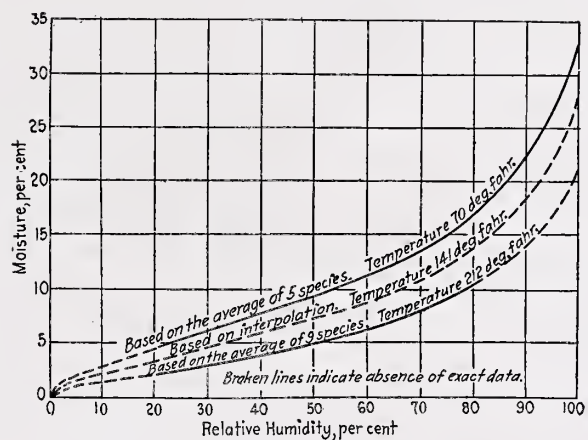


Fig. 2. Curves Showing How the Effectiveness of Different Primers as Moisture-Proofing Agents Varied for Different Woods

- (10) Weigh every 24 hr. for first week, every 48 hr. thereafter and determine percentage of increase in moisture

Note: Please bear in mind, of course, that whatever is used in the way of coatings, it must serve as a suitable foundation for subsequent coats of paint and varnish.

In general, the results of the tests showed that paints of the ordinary brands and formulas were not very effective as moisture-proofing agents, even when three coats were applied. One paint concern after testing its standard brands, did a little experimenting, and without much difficulty was able to produce a special primer that was several times as effective. The curves in Fig. 2 show quite emphatically the variation in effectiveness of the paints used. Averaging the results for hickory, oak, maple and birch, it took about six times as long for these test pieces to absorb an extra 6 per cent of moisture when coated with the "special" as when coated with the standard "A." There is every reason to believe that much better results can be secured and with less than three

coats. Preliminary tests with a casein solution indicate that it has waterproofing qualities, which, for some classes of protection, may be very valuable. The same is true of some of the pyroxalin compounds. Varnishes are in general more effective than paints, but in the protection of wheels its application was not suitable for primary coats.

*(To be continued)*

### Electric Heating of Residences

THE electric heating of houses is an accomplished fact in Tacoma, Washington, and an interesting report upon it forms the subject of Bulletin No. 15, Engineering Experiment Station, State University, Seattle, Washington. The bulletin contains 40 pages and is illustrated. It was written by Edgar Allen Loew, Associate Professor of Electrical Engineering.

The municipally owned Tacoma lighting plant was completed and put into operation in 1912. It consists of a hydroelectric development of 20,000 kw., at La Grande, Washington. Power is transmitted over two 55,000 volt transmission lines to the Tacoma sub-stations, from whence it is distributed throughout the city at 4,000 volts.

In 1914 the city decided to stimulate the use of electric heating in order to market as much as possible of the output of electrical energy it possessed. A low energy charge of  $\frac{1}{2}$  c. per kw. was adopted and a campaign inaugurated to induce people to install electrical furnaces and water heaters. The report goes into detail on costs of installation and operation and is decidedly interesting.

The total cost of the transmission and generating system is \$243.00 per kw. During 1919 the average selling price of all energy sold was 1.32 cents per kilowatt hour and the net reported surplus was \$408,309. During the year 1920 a greater number of kilowatt hours was sold and the average selling price was 1.19 cents per kw. hr. approximately, returning a net surplus of nearly \$575,000. The heating business, with its low charge, is looked upon as in the nature of an excess or surplus power load.

The author shows that at the low rate given, the annual cost of heating a house with an electric furnace is practically equal to the cost of heating with a coal fired furnace with coal at \$9.20 per ton. The efficiency of heating by electric heaters located in the space to be heated is 100 per cent. The average efficiency of the coal fired furnace was assumed to be 45 per cent. The best planned, best installed and most efficiently operated warm air furnace yields a maximum efficiency of

about 60 per cent. Improvements are gradually being made in coal-burning, house-heating furnaces and 60 per cent efficiency may be obtained with care. If an average efficiency of 60 per cent were attained, electrical energy at a half cent per kw. hr. would be on a par with coal at \$18.00 per ton; or, with coal at \$9.00 per ton electrical energy would be on a par with it if sold to the consumer at 0.25 cent per kw. hr.

The conclusions reached are that when Tacoma has no surplus power to sell the electric heating of houses will cease, except possibly the use of small radiant heaters for special occasions. The cost of water power development is too great to admit of such development for heating purposes. It is out of the question to develop electrical energy for this purpose from steam. The maximum thermal efficiency which would be possible by heating electrically from energy generated in a steam plant is under 20 per cent, while by consuming fuel in furnaces in the home 40 per cent energy efficiency is ordinarily obtained, and 60 or 65 per cent efficiency may be obtained as a maximum. Thus the energy efficiency secured by the latter method is from 2 to 3 times as good as that of the former. Electrical heating need not therefore be regarded as a competitor of wood, coal, or oil, although it is at present remunerative in Seattle in that the energy sold for this purpose helps pay fixed charges on the municipally owned plant.

### The Strength of Concrete

THE Division of Engineering Research of the State University, Austin, Texas, announces that Bulletin No. 2215 is ready for distribution.

The bulletin describes tests made to determine the values of certain local materials and two somewhat surprising statements are made. One is that the strength of concrete is practically independent of the strength of the aggregate, a conclusion differing so greatly from all previous results obtained by other experimenters as to call for careful study of the tests on which the claim is based. The other statement relates to a series of tests which show that the tensile strength of mortar made with natural limestone sand is stronger than mortar made from silica sand having the same grading.

The subject matter is of enough importance to make the bulletin a valuable record of concrete tests for all who attempt to keep in touch with developments in the materials of construction. Copies will be mailed free on receipt of request addressed to the University of Texas, Austin, Texas.



# SOME NEW BUILDINGS IN LONDON AND SOME OLD ONES

BY EGERTON SWARTWOUT, F. A. I. A.

AT the Southwark end of Westminster Bridge, diagonally across the Thames from the Houses of Parliament, squats a long yellowish-drab building with a high red tile roof; a recently completed building, and intended, I believe, to contain the offices and chambers of the London County Council. The site is fine, the building is large and undoubtedly expensive, and I'm sure the intentions of the London County Council and of the architect were good, but the general effect is deplorable. As I recall it, there was a competition held for this building some fifteen years or so ago, and this competition, like many of the English competitions, was an open one, and was won by a very young architect of little practical experience; and the execution of this important and expensive structure, costing, I think, over ten million dollars, was entrusted to the successful architect without association with an older or more experienced firm. If this statement is correct, I regret I have no means of verifying it as I write; if conditions were as I stated, then the whole proceeding is a distinct example, not of the evils of competitions in general, but of the evils of open and unrestricted competitions in particular. It is conceivable, of course, that a young and inexperienced architect might design and execute a highly successful monumental building; Elmes did it on the exterior of St. George's Hall in Liverpool and there may be

other examples, but the chances are that he won't. There is a great deal of difference between a project and a working drawing. I have no way of knowing whether the building as built is similar to the original sketch, but I assume it is. I can see no other reason for the steep, bare, tile roof than that it was a competition stunt, nor for the curious circular recess in plan in the center of the facade. A circular recessed front, where it leads up to a central dominating feature, can be most successful, as is shown in the Palais de l'Institut in Paris, but the London County Council Building has no dome as the Paris example has, and consequently the steep roof in silhouette looks as if some modern Gog or Magog had taken a huge bite out of it.

From "The Architects' Journal," London



The River Front  
London County Hall

The fenestration is restless and unmeaning; large windows which are not large windows at all, but groups of small ones, alternate with stretches of blank wall pierced with rectangular holes. In fact, I never appreciated how good the Houses of Parliament were until I contrasted them with their new neighbor across the river. And the interior is no better—there is a good deal of marble and a vast extent of corridors, but the marble is ordinary and ill selected, particularly the Cippolino wainscot in the Council Chamber, the detail is poor and unstudied, and some of the finish seems cheap, particularly in the subsidiary stairs. The whole thing is, as I have said, deplorable; a wonderful



Trinity House



The Back—Trinity College Library



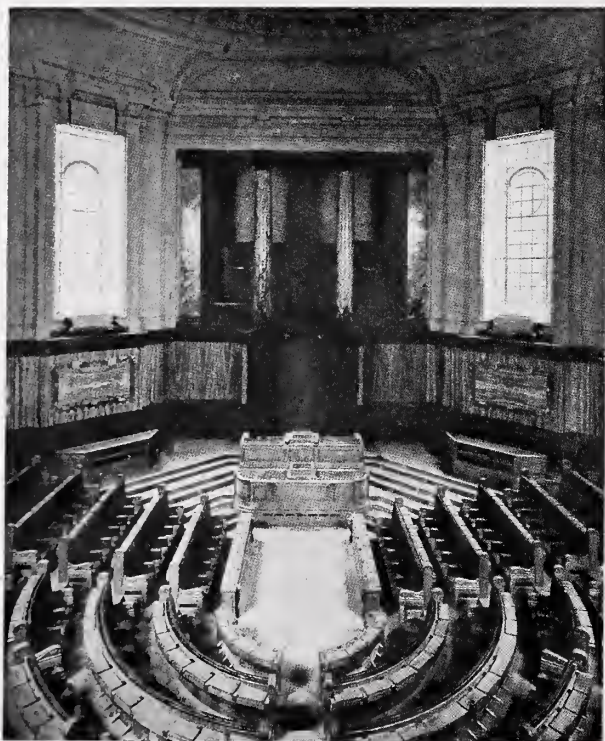
monumental chance has been thrown away.

Westminster Cathedral can hardly be called a new building because it has been under construction for a number of years, nor can it be called an old one because it is not yet entirely completed, but there can be no doubt it is an interesting one. The exterior, which is substantially complete, is not very successful. There is a lack of simplicity about it, a fussiness of composition and detail which is quite at variance with the grandeur of conception of the interior. It was probably necessary for reasons of economy to use brick instead of stone for the facade, but if the

vaults, of brick and of concrete, not sham structures of wire lath and plaster; and these great, simple vaults, unfinished as most of them are, are wonderfully impressive. Some of the chapels are finished; marble, mosaic and gold are freely used and the effect is rich and generally successful, though there is a little too much stiffness and symmetry in the handling of the detail. This, of course, is only what is to be expected in modern work. It is practically impossible for an architect to make enough drawings to vary the detail everywhere, and even if he did, the work would not have that spontaneity and freedom which is one of the charms of the Byzantine style. It is unfair to judge the nave in its uncompleted state, but I cannot help a feeling of regret that those great, simple vaults will eventually be covered with decoration; and yet, decorated or not, the interior is, and will be, most impressive.

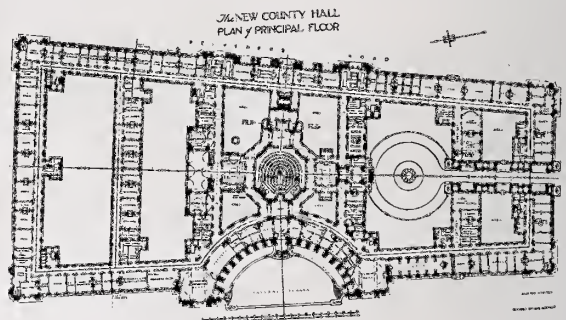
Down near the Tower of London and fronting

From "The Architectural Review," London



Council Chamber  
London County Hall

brick had been used in great simple masses, as at Albi, for example, and if the exterior had been more expressive of the plan and of the interior vaulting, a much more monumental effect could have been obtained. This simplicity of design would have been of particular value, too, because of the restriction of the site. There is no direct approach to the Cathedral, and the surrounding streets are narrow and unimportant, and the scale therefore of the building should have been great so as to dominate the surroundings. But leaving aside the exterior, there are two features of great distinction at Westminster—the general conception of the interior and the honest, legitimate construction. For here is a modern building in which the vaults are real



Floor Plan, London County Hall

a little park is a new building with a rather curious tower and which contains offices of the Port of London or something of the sort. Here again the architect was unable to let the design alone; the general scheme is good enough, but there are too many parts; there are too many columns, too many windows, too many statues and too many little breaks and vases and dewdads on the tower. And it's all the more surprising that that should be so because right next door is the charming little facade of Trinity House. I suppose I must have seen Trinity House before; I've certainly been to the Tower a number of times, but for the life of me I can't remember that I ever did see it, or what is more, that I ever saw a photograph of it, and it's well worth seeing. I thought when I saw it the other day that it was the most charming thing in London, and I went back several times later to see it again. It's only a facade; the architect seemed to have had a childish faith that no one would see it except from the Park and therefore did not waste either time or money on the sides, but the front is really beautiful, the detail excellent and the scale good, and what is surprising in London, the stone work



has not been painted. There is one little point in design that is worth noticing; the break at the interior corner of the pavilion is not carried up in what we would call a logical manner; there is a small pier, or rather a piece of the wall about a foot wide inside of the pilaster, and the break in the rusticated basement occurs on this line, and there is no break over the pilaster although the pilaster has at least a three inch projection. In other words, the entablature continues unbroken over the pilaster, leaving a soffit of three inches supported by nothing. A modern architect would, of course, be logical and put in a break over the pilaster and would thereby ruin the simplicity of the whole facade. The overhang of the architrave is really not noticeable and is certainly unobjectionable, and the point is interesting as being a very complete illustration of the rule in architecture, that if a thing looks right, it is right.

There is another new building in London which is of particular interest because it is designed by an American, but which I regret to say is not sufficiently completed to give a very definite idea of just how it will look. I refer to the Bush Building by Helmle and Corbett. It is a large office building, some seven or eight stories in height and is very centrally located, just to one side of St. Mary le Strand, on the axis of Kingsway. Although covered by scaffolding, enough of the general proportions are evident to show that Harvey Corbett will obtain as successful a silhouette here as he did in the Bush Building on 42nd Street. Little can be seen of the detail, but there is a great arched opening facing Kingsway which will be impressive provided it can be pulled into scale with the fenestration on the side. There has been lately in London a good deal of agitation as to the height of buildings. Some of the members of the Royal Institute of British Architects who insist that they are progressive, backed, I presume, by what certain newspapers in New York call "the interests," have been clamorous in their advocacy of an increased height, while a larger number of the more conservative members have just as strenuously opposed it. The Bush Building is one of the highest in London, I should imagine the very highest, but it is so large and the silhouette of the upper stories is so skillfully handled that its height is not objectionable, although it does naturally dwarf the fine old church alongside of it. I feel sure, however, that this height should not be exceeded; in fact, I think it would be better if it was never reached. All buildings cannot have the mass nor the location of the Bush Building and a thin slab of a building with a narrow front and dreary blank sides would be something horrible in London. Then, too, think of what the advocates of "A Brighter London" could do, and probably would do, with a great, flat, windowless

expanse. The genius who painted bright blue the clock dials of St. Clement Daves would go far with an opportunity like that. Really, if some philanthropist would only corner the paint market in London his name would become immortal. Apparently when the average Londoner has nothing else to do he rushes out and paints his house, especially if it is a stone house. There is a beautiful old house on Dover Street, St. James. I don't remember for whom it was built or what



Detail, Trinity House

was the name of the architect, but it is one of the finest Georgian houses in London and every architect knows it and loves it. Now, some decorator or tailor has it and they are painting the jambs of the windows and even the stone door trims a glaring white. Next year they will probably paint the whole business. And even the venerable Abbey is undergoing some repairs and they have scrubbed with acid or sandblasted several bays on the Northeast front, with the result that that portion of the Cathedral looks as if it had been modelled in plastoline of a loathsome whitish-yellow color; and this same unfortunate condition is not confined to London. In Oxford the sandstone has so badly deteriorated that some restora-

tion was, I suppose, imperative. The surface is badly scaled and a great deal of the detail has dropped off, but I should imagine the safety of the thick walls was not impaired, and that a very



Offices of the Port of London

little careful work would render everything safe. But, instead, the universal custom seems to be to replace whole slabs or parts of cornices or whole balustrades and parapets, not with some stone that would match the old work but with the same stone originally used which, when new, is a particularly obnoxious light yellow. The result is worse than a repaired brownstone front in New York, and the symmetry of design of the whole building is ruined, and the charm of age to a

large extent dissipated. And in Oxford as in London the paint pot is always in evidence. Cambridge has suffered less. The stone there is generally of a better quality and the exteriors are in much better condition, though there is some of the same nasty yellow sandstone. Particularly is this evident in Wren's Library of Trinity College. This stone does certainly take a wonderful color when it's very old, but the Trinity Library is not old enough. The stone is dirty and blackened only in spots, often around the joints, and at first glance the building seems to be made of a cheap quality of terra cotta. And in connection with the Library, I never realized before this last visit that the back of it was much finer than the front. I never did think the front one of Wren's best works. It's too much like the Library of St. Mark's to be original and it certainly lacks its charm and distinction, and then the whole scheme is a fake. I suppose there was some reason for the bare flat ceilinged loggia on the ground floor and its height was probably dictated by the height of the adjoining cloisters, but if this condition was laid down at the start, Wren's solution of filling in the spandrels was certainly poor. On the back however, he does not repeat the false arches of the front; there is only a great blank wall pierced with well proportioned windows, and on account of the location of the floor line there is a fine plain wall surface above the windows. Then, too, the facade is longer on the back by the width of the two flanking sides of the court in front, and two pavilions are thus formed, which are a distinct addition. In fact, the back of the Library is extremely monumental and in its beautiful setting with the great trees and smooth lawns and the quiet little Cam flowing peacefully in the foreground, the effect is wonderful.

On my return to my office I find that there is a small and rather poor photograph of Trinity House in Richardson's *Monumental Architecture in Great Britain and Ireland*, but neither this photograph nor the snapshots accompanying this article give an idea of the real beauty of the building. Trinity House is one of those buildings which look much better in actual execution than in the photograph or in drawings, and the same condition applies to the back of Trinity College Library.



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## THE FALL CONFERENCE

**T**HE Fall Conference will be held in Chicago on the evening of November seven-teenth. The subject for discussion will be uses, available qualities, and standard grading rules of lumber.

Since the subject of lumber is too comprehensive to permit even a most condensed survey in one evening, the program will be devoted to discussions regarding the various uses to which lumber may economically be put in building construction and the available qualities for specific uses, with a discussion on the present condition concerning simplification of standard grading rules.

The Institute will have prepared for discussion a tentative outline for specifications for carpentry work, this outline to be considered from the standpoint of practical use pending the solution of the problem of grades and qualities by all the national bodies and agencies of government that are constantly at work on the simplifications for the lumber industry.

## MONTHLY MEETING OF CHICAGO SECTION

The members of the Institute resident in Chicago and vicinity will meet in monthly session on November third under the direction of the Chairman of the Advisory Committee, Mr. R. J. Gaudy. This meeting is expected to cover some

of the ground work of the program for the Fall Conference and discussions also will be held on the tentative list of specifications to be released in the immediate future. This tentative list is given below:

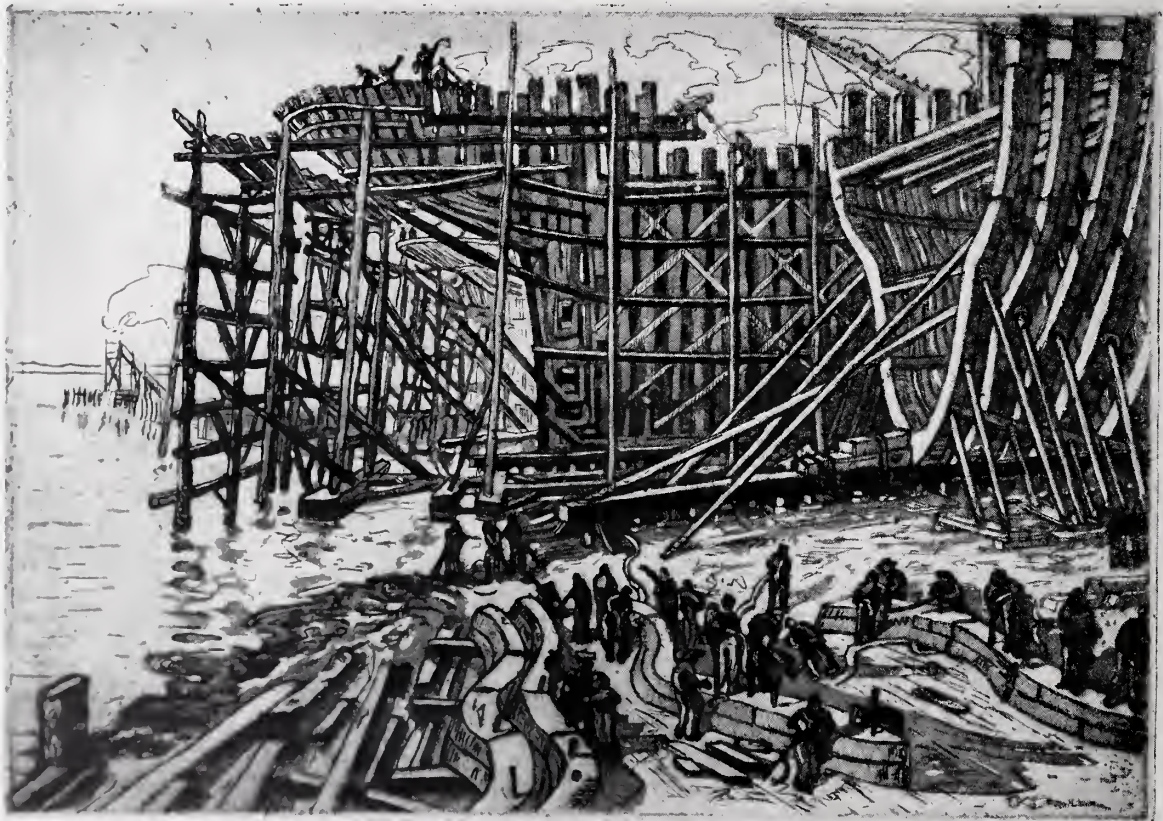
Steel Stack	Turbines
Concrete Stack (Structural design)	Traveling crane
Sewage Disposal Plant	Power piping and equipments
Vacuum Cleaning System	Illumination
Reinforcing Steel	Generators
Testing	Converters
Automatic Sprinkler System	Switchboards
Air Conditioning (Ventilating)	H. P. Return tubular boilers (Horiz. & Vert.)
Foundations	Traveling grate stokers
Excavations	Mechanical draft equipment
H.P. Water tube boilers (various types)	Incinerators
Underfeed Stokers	Steam engines
Overfeed Stokers	Pumps and F.W. Heaters
Economizer	Refrigerating and Ice-making equipment & piping
Pulverized coal equipment	

Internal combustion engines	Wells
Heating piping	Plumbing
Insulation (for pipes and ducts)	Ornamental Bronze and Iron
Kitchen equipment	Miscellaneous Iron
Laundry equipment	Sheet metal
Electric wiring	Composition roofing
Private telephone systems	Furring and lathing
Fire Alarm Systems	Plastering (plain and ornamental)
Clock systems	Interior wood trim
Fire brick	Cabinet work
Steel tanks	Interior marble
Brick Chimneys	Painting and decorating
Oil burning equipment	Waterproofing and dampproofing
Elevators	Plastic floor materials
Dumb waiters	Lumber
Pavements	Steel sash
Wire rope	Exterior stucco
Cut stone (granite, limestone, marble)	Hollow metal fire windows
Terra Cotta	Hollow Metal trim
Acoustics	
Sound Insulation	

## THE ADVISORY COMMITTEE

THE Chairman of the Advisory Committee informs the office of the Executive Secretary that he is scheduling the season's work and from the response that he has had in the past from various members of the Advisory Committee, he feels confident that the Committee work will be extremely valuable during the coming year. As the specifications noted in the above tentative list are prepared for release, they will be submitted to members of the Advisory Committee for their criticism and suggestions, and it is hoped that each one will find it possible to devote sufficient time to this work to assure a reflection of his specific knowledge on particular points.

The Chairman of the Advisory Committee will ascertain the particular predilection of the Committee members so that specifications on which they feel it impossible to submit beneficial criticisms will not be sent them and to insure that specifications covering work with which each member is perfectly familiar and for which he has made special studies, may receive his undivided attention without the distraction of having to investigate specific points on matters somewhat foreign to his training.



War Scenes in Wooden Shipyards

(From the original aquatint by Frederick K. Detwiller)





The New Junior High School  
Savannah, Ga.

Wm. B. Ittner  
Architect



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### Competition for Designs for a Small General Hospital

TO obtain for the typical small community in America a hospital building which is at the same time efficient in arrangement and creditable in architecture, *The Modern Hospital*, has issued the formal program of a prize competition, open to all architects.

Prizes amounting to \$1,000 are to be given to successful contestants, and although certain definite requirements are set forth in the program, the avowed intention of the competition is to bring out new thought in hospital construction.

The Illinois Chapter of The American Institute of Architects, to which the general program of the competition was submitted, has approved it as to form and method of procedure. Richard E. Schmidt of the firm, Richard E. Schmidt, Garden & Martin, of Chicago, is the architectural adviser. The jury of award is to be composed of two architects, two hospital superintendents and a graduate nurse who has had experience as superintendent of a small general hospital.

Three cash awards of \$500, \$300 and \$200 and two honorable mentions are to be given. The prize-winning drawings, according to the rules of the contest, become the property of the publishing company, but the author is not prohibited from making any individual use of his designs.

The competition calls for a set of plans of a general hospital of from 30 to 40 beds. Registration for the contest must take place on or before November 15, 1922, and the final date for submitting designs is January 15, 1923.

The general program of the contest may be had by addressing the Chicago office of *The Modern Hospital*.

### A New Normal Condition

IT is a fallacy to speak of returning to normal times and to normal foreign exchange and, in America, to normal building and rent costs, states *The Straus Investors Magazine*. In this country and in every country in Europe wages have increased with the cost of living. People are making more money than they ever made before. They must make more money in order to buy the necessities of life. If rents and food products and clothing prices were to return to pre-war figures without a corresponding reduction of salaries, employes of big corporations and other business houses would be greatly overpaid. The balance would be destroyed. For a long time after prices began to rise in this country, salaries did not increase in proportion so that many clerks and other workers felt the pinch of poverty. This injustice has gradually been remedied and it is probable that in spite of the great increase of rents and cost of food products and clothing, most people in

employment are living as well now as they did in 1914.

The balance of earnings and living costs has been maintained; this enormous complicated business machine has been tuned up to present living costs, so that matters are not likely to change greatly for years and years.

Had it not been for labor troubles during the summer, America would probably have seen a rapid return to prosperity and comfort throughout the land. Even as it is today, there is little poverty or want in this country. Some complaints are heard that the retail business is not what it used to be; that clothing dealers, and shoe merchants are obliged to sell their stock at a sacrifice because they need money. But such conditions occurred frequently before the War and cannot be blamed on the great conflict.

All things considered the future looks bright for America.

### New York Society of Architects

AT the September meeting of the New York Society of Architects it was resolved that the Society make application to the Board of Appeals to adopt a uniform method of procedure for all Superintendents of Buildings in approving plans by architects and others, independently of any action in granting of building permits. This resolution was passed as expressing the Society's sense of the confusion existing in the various branches of the Building Department, arising in part from the newly adopted requirements of the compensation law.

### Architecture and the Lay Press

THE architectural horizon is expanding visibly, states a recent issue of *The Architects' Journal*, London. Like several other architectural educationists, Mr. W. S. Purchon, principal of the architectural department of the Technical College, Cardiff, is extending his sphere of influence far beyond the college walls by diligently writing for the lay press. We trust that the architectural professors will keep it up, and that they will be strongly reinforced by architects who are not professors, but are, nevertheless, competent to treat an inherently attractive subject in an appropriately attractive style. For many years we have advocated the more extended use of the Press for the popularization of architecture as a subject of interest to "the general reader," and at last the editors of the lay newspapers seem to be quite convinced of the fact. We note with pleasure that *The Times Literary Supplement*, which has always given much evidence of its recognition of architecture as a fascinating subject of study by readers of cultured tastes, gives in its





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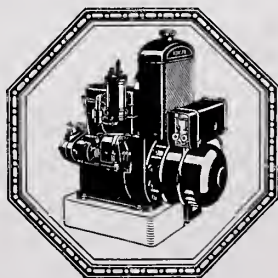
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current issue a column of "Architectural Studies;" and the fact is one on which we take leave to congratulate both the editor and the author, but more especially the readers of the *Supplement*, and of similarly fortunate newspapers, in being offered a comparatively unfamiliar means of combining pleasure and profit in their reading.

#### Inspect Smoke and Furnace Pipes

**I**N the fall and early winter special attention should be paid to stove pipes, furnace pipes, smoke vents and flues. Where these are of metal they frequently rust, come apart or deteriorate during the summer, and when fires are started up in the fall, or they are put to a severe test during the first very cold weather, a blaze is likely to result. Now that fire prevention and safety first have become national slogans, the importance of careful supervision of heating apparatus and flues should be recognized by every good citizen, and a thorough inspection should always precede the first use of heating apparatus.

There is special need of unusually careful attention to flues, smokepipes and heating apparatus generally this season, because of the abnormal fuel conditions. Millions of householders will be compelled to use soft coal who have heretofore used hard coal, and the change will necessarily introduce many serious fire hazards, unless great care is taken to see that flues and smokepipes are kept clear and that proper safeguards are provided for the other dangers which will develop.

Fires due to faulty furnace pipes and smoke pipes have been unusually numerous this season, especially where there was dampness. Where the surface was already corroded by the heat and fumes, the dampness soon rusted the metal so that a pipe which looked all right on the outside would collapse with the slightest strain. The danger of such pipes in basements, often near wooden partitions and ceilings, is evident, but only an inspection would reveal the interior weakness.

These warnings should be especially emphatic as to dwellings, for basement fires are apt to get under dangerous headway before they are discovered, and when they occur at night, life as well as property is endangered. Special attention should also be paid to furnace pipes and smoke vents in churches and schools, because of the large numbers of people whose lives are at risk. School boards and church trustees, working on the theory of personal responsibility for preventable fires, should

pay special attention to these danger points, and if necessary, the metal smoke pipes leading from the furnace to the chimney should be replaced each year to insure safety. An ounce of fire prevention is worth a pound of fire extinguishment.

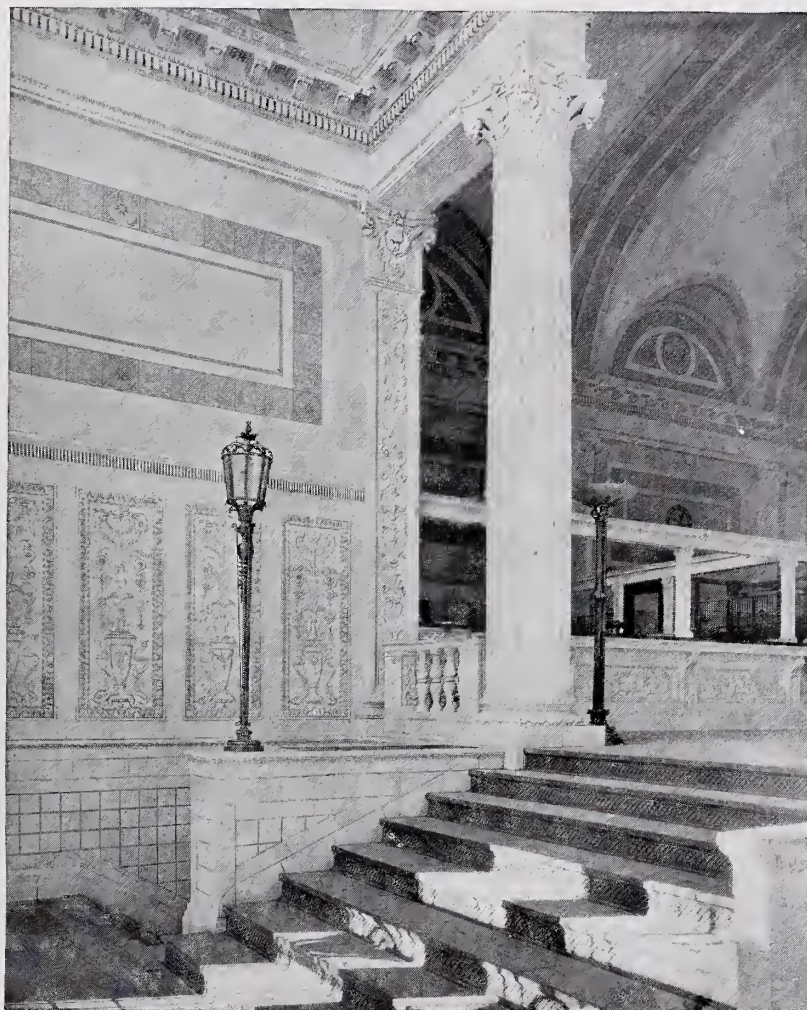
#### Hardy's Architecture

**A** CORRESPONDENT to a recent issue of the *New York Times* comments as follows: "I have often wondered that some architect, who is at the same time a literary student, does not write a study of the architectural passages, allusions and subtle suggestions in Thomas Hardy's novels. These are extremely abundant and interesting. I am reminded of this by the fact that Mr. Hardy has been elected, even at this date, and even at his age, to be President of the new Architecture Club, which has just inaugurated itself by a dinner at the Hotel Cecil in the Strand. The first article that Mr. Hardy ever wrote, at any rate in a literary way, was entitled 'How I Built a House,' and although, of course, he has dealt in life and human nature, his old profession has inspired many a fine passage in his novels. 'A Pair of Blue Eyes' is permeated with this professional knowledge, and so in a smaller degree is 'The Woodlanders.' Even the marvelous descriptions of Egdon Heath in 'The Return of the Native' suggest an architect's sympathy with nature's architecture."

#### Growing Colored Wood

**A** METHOD of coloring the wood of growing trees has been devised by a German engineer, who has been able to color the tree any shade while it is still growing. Various anilin dyes are used, which do not poison the tree or affect its growth in any way. The entire tree, from the very ends of its roots to the top-most branch and leaf, can be colored any desirable shade within 48 hours after the solution of the dyestuff is injected into the roots. About 50 grams of the dye are used to 200 liters of water. The sap of the tree carries the coloring matter throughout its structure. This new development opens up many possibilities of securing novel and startling effects in the novelty business, and it also makes possible the perfect imitation of certain natural woods. It is reported that certain Dutch and American interests are giving this process serious attention.—*The Industrial Digest*.





*Interior, Fidelity Trust and Savings Bank, Chicago, Ill. A.H. Andrews Company, Architects. Wall panels, pilasters, columns, entablature and counter screens in ivory matt glazed Terra Cotta.*

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*Dignity* is an imperative need in the interior finish of an important banking institution. Few instances could be more exacting than the example shown.

For information address National Terra Cotta Society, 19 West 44th Street, New York, N. Y.

# TERRA COTTA

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## PERSONALS

Leslie A. Libby, architect, has moved his office from the Boyd Building, Portland, Maine, to the Falmouth Gardens, that city.

John E. Youngberg, architect, has moved his offices from 30 North Dearborn Street, Chicago, Ill., to 431 South Dearborn Street, that city.

B. Albert Comm, architect, has moved his office from 3227 West Division Street to 1322 North Hayne Avenue, Chicago, Ill. Manufacturers are requested to send catalogs and samples.

Eugene A. Stopper, architect and engineer, desires to announce the removal of his offices from 1507 Arch Street to 510 Fuller Building, 10 South Eighteenth Street, Philadelphia, Pa.

Louis Schalk, for a number of years in the office of Miss Julia Morgan, architect, of San Francisco, is now associated with Charles K. Sumner, with offices in the Mechanics Institute Building, San Francisco, Cal.

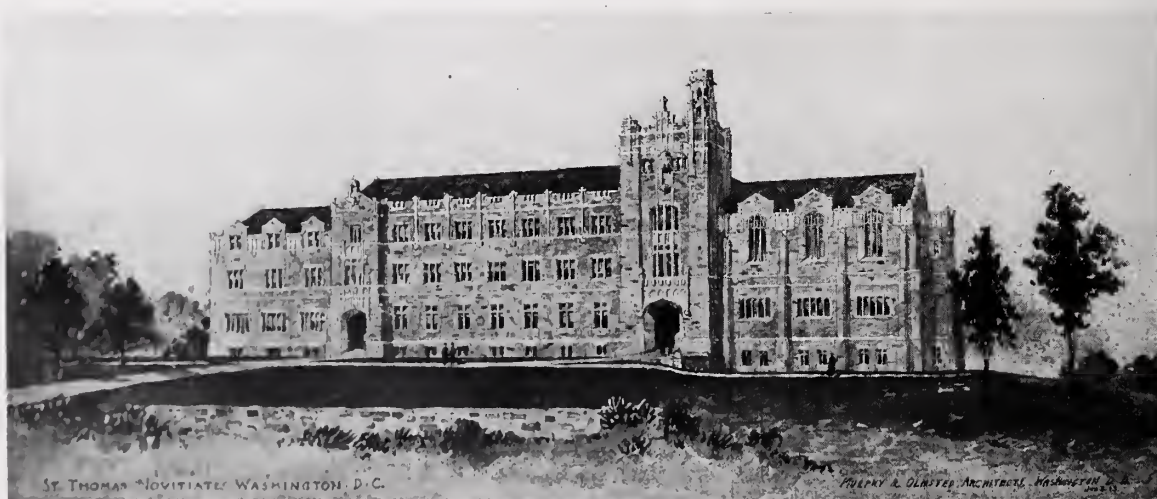
Albert Farr, architect, Foxcroft Building, San Francisco, Cal. has taken into partnership for the practice of architecture, J. F. Ward, formerly of New Zealand, and a member of the Institute of Architects there. The firm name will be known as Albert Farr, architect, and J. F. Ward.

It is announced that Louis Andre Lamoreux has opened an office for the practice of architecture, at 130 Mohican Building, Mansfield, Ohio. Manufacturers' samples and catalogs are requested, with particular reference to the better class of residential design.

Announcement is made that G. Buller Colthurst of the architectural firm of Nichols, Sheppard & Colthurst, 15 Sandwich Street, West, Windsor, Ontario, has withdrawn from the existing partnership, and will in future practice by himself at 32 Sandwich Street, West, Windsor. The present firm, under the name of Nichols & Sheppard, will continue to practice as usual at the old address.

Announcement is made that Clarence J. Finney of the A. and M. College, Texas, won the first place in the annual Southern intercollegiate competition in architecture. Henry J. Lawrence of the University of Virginia, won second place, and L. B. Parrott, of the Georgia School of Technology, third place. The problem was the design of a college swimming pool, and was prepared by Professor William Emerson of the Massachusetts Institute of Technology.

Alfred C. Bossom, architect, 680 Fifth Avenue, New York City, has recently returned from a month's trip to Europe. While abroad, Mr. Bossom extended an invitation, on behalf of The Architectural League of New York, to the Royal Institute of British Architects to send an exhibition of drawings to this country for the League's annual exhibition to take place early in 1923. Howard Greenley, president of the League, has only recently returned from France, where a similar arrangement with the French architects was made. While in London, Mr. Bossom was invited to judge the drawings submitted in a competition for a large commercial building there for which a gold medal is to be awarded.



St. Thomas Novitiate, Washington, D. C.  
Murphy & Olmsted, Architects  
(For further illustrations see Plate Section)



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# REFERENCE LIST OF BUSINESS LITERATURE

*A service arranged for the use of the Architect, Specification Writer,  
and Architectural Engineer.*

This list of the more important business literature of Manufacturers of building material and equipment is published each issue. Any of these publications may be had without charge, unless otherwise noted, by applying to The American Architect and The Architectural Review, 243 West 39th Street, New York, or obtained directly from the manufacturers. Either the titles or the numbers may be used in ordering.

## AIR CONDITIONING—See also Heating and Ventilation

**The Bayley Manufacturing Company**, 732-760 Greenbush St., Milwaukee, Wis.

456. *Bulletin No. 23*. This bulletin is descriptive of the Bayley Turbo-Atomizer, the Bayley Turbo Air-Washer and Air Conditioner, for cleaning, cooling, tempering, humidifying and dehumidifying air. It contains an interesting treatise on air conditioning methods together with useful tables and a set of specifications. 32 pp. Ill.  $7\frac{3}{4} \times 10\frac{1}{2}$  in.

## ARCHITECTURAL IRON WORK—See also Ornamental Metal Work

### ASBESTOS—See also Lumber, -Roofing

**Johns-Manville Co.**, New York, N. Y.

372. *Catalog No. 304*. A treatise on the manufacture and uses of Johns-Manville Building Materials made of asbestos and mastic for all places exposed to fire or corrosion. 100 pp. Ill. in colors. Board covers.  $8\frac{1}{2} \times 11$  in.

### ASBESTOS ROOFING—See also Roofing

**The Philip Carey Co.**, Lockland, Cincinnati, Ohio.

350. *Asbestos versus Fire*. Booklet in colors. Contains information about asbestos; data on Carey Prepared and Built-up Asbestos Roofing; pictures of buildings on which they have been used. 15 pp. Ill.  $6 \times 9$  in.

### ASH HOISTS—See also Hoists

**Gillis & Geoghegan**, 537 West Broadway, New York, N. Y.

329. *General Catalogue*. Contains specifications in two forms, (1) using manufacturer's name, and (2) without using manufacturer's name. Detail in  $\frac{1}{4}$  in. scale for each telescopic model and special material handling section. Fully illustrated with photographs of actual installations and descriptive matter of same. 20 pp., 2 colors,  $8\frac{1}{2}$  in.  $\times$  11 in.

- F592. *Ash Removal Pamphlet 190*. This pamphlet contains the results of various tests of safety, speed and economical operation of G. & C. Telescopic Hoists. Each step in the operation of the equipment is clearly shown. 8 pp. Ill.  $6 \times 9$  in.

### ASH RECEIVERS

**Sharp Rotary Ash Receiver Corporation**, 396 Bridge St., Springfield, Mass.

205. *Catalogue E*. Booklet describing the Sharp Rotary Ash receiver with illustrations of houses in which the furnaces are equipped with this device. 24 pp. Ill.  $6 \times 9\frac{1}{4}$  in.
331. *Catalogue F*. A Booklet for architects and builders telling what the Sharp Rotary Ash Receiver is and what it does; together with tables of dimensions for installation. 8 pp. Ill.  $6 \times 9\frac{1}{4}$  in.

### BAKERY EQUIPMENT

**Read Machinery Company, Inc.**, York, Pa.

275. *Three Speed Kitchen Machine*. A booklet describing a useful apparatus for mixing cake batches, fancy pastries, mashing potatoes, sieving soups, crushing fruits and vegetables and for general whipping, creaming, beating and mixing duties in hotel and restaurant kitchens.

### BOILERS—See also Heating

**General Boilers Company**, Waukegan, Ill.

444. *Catalogue No. 7*. A catalog completely describing the construction and operation of Pacific Steel Boilers. Contains also specifications and price lists. 32 pp. Ill.  $6 \times 9$  in.

**Green Engineering Co.**, East Chicago, Ind.

- F591. *Progressive Combustion, Modern Practice*. This book contains a description of the various coals of America; the fundamentals of combustion; furnace design; design of chimneys; furnace draft and combustion rates; coal burning capacity of grates; essentials of power plant economy. 24 pp. Ill. with diagrams and half tones.  $8 \times 11$  in.

**Utica Heater Company**, Utica, N. Y.

- F589. *Public Building Bulletin*. Describes the Super-Smokeless Boilers, a new development in boiler construction, utilizing the principle of the Bunsen burner and burning the cheaper grades of soft coal with great economy and efficiency without smoke. 12 pp. Ill.  $8\frac{1}{2} \times 11$  in.

### BRICK

**American Face Brick Association**, 1754 People's Life Bldg., Chicago, Ill.

103. *The Story of Brick*. Contains the history of, and basic requirements of building brick, artistic, sanitary and economic reasons, comparative costs, and fire safety with photographs and drawings, and illustrates ancient and modern architectural works of note in brick. Size  $7 \times 9\frac{1}{4}$  in. 56 pp.

137. *A Manual of Face Brick Construction*. The history of brick making, types of face brick, showing details of construction for walls, chimneys and arches. Details of use of tile and brick construction and different types of bonds are given. A series of plans and elevations of small brick houses, descriptions, useful tables and suggestions are illustrated and described. Size  $8\frac{1}{2} \times 11$  in. 116 pp. Price \$1.00.

**American Face Brick Association**, 1754 People's Life Bldg., Chicago, Ill.

155. *The Home of Beauty*. A booklet containing fifty prize designs for small brick houses submitted in national competition by architects. Texts by Aymar Embury II, Architect. Size  $8 \times 10$  in. 72 pp. Price 50 cents.

371. *Architectural Details in Brickwork. Series One, Two and Three*. Each series consists of an indexed folder case to fit standard vertical letter file, containing between 30 and 40 half-tones in brown ink on fine quality paper. These collections are inspiring aids to all designers. Sent free to architects who apply on their office stationery; to others, 50 cents for each series.

454. *Bungalow and Small House Plans*. Four booklets containing plans for attractive small brick houses, containing 3-4, 5, 6, and 7-8 rooms. 50 pp. Ill.  $8\frac{1}{2} \times 11$  in. 25 cents each, \$1.00 for the set.

### BUILDING CONSTRUCTION

**Concrete Engineering Co.**, Omaha, Neb.

347. *Handbook of Fireproof Construction*. An illustrated treatise on the design and construction of reinforced concrete floors with, and without suspended ceilings. The Meyer Steel-form Construction is emphasized and tables are given of safe loads for ribbed concrete floors. 40 pp. Ill.  $8\frac{1}{2} \times 11$  in.

**Truscon Steel Company**, Youngstown, Ohio.

317. *Truscon Floortyle Construction. Form D-352*. Contains complete data and illustrations of Floortyle installations. 16 pp. Ill.  $8\frac{1}{2} \times 11$  in.

318. *Truscon Standard Buildings. Form D-398*. Describes Truscon Standard Steel Buildings, with diagrams, illustrations of installations, descriptive matter and list of users. 48 pp. Ill.  $8\frac{1}{2} \times 11$  in.

319. *Truscon Building Products. Form D-376*. Contains a brief description of each of the Truscon Products. 112 pp. Ill.  $8\frac{1}{2} \times 11$  in.

320. *Modern School Construction. Form D-396*. Contains illustrations of schools, with typical elevations, showing advantages of Truscon Products for this construction. 16 pp. Ill.  $8\frac{1}{2} \times 11$  in.

### BUILDING DIRECTORIES

**The Tablet & Ticket Co.**, 1015 West Adams St., Chicago, Ill.

517. *Office Building Directory*. Bulletin illustrating and describing directories made by this company providing for any required number of names. Frames of wood or metal with glass cover or doors. Name strips with one quarter inch white letters furnished. Size  $7 \times 10$  in. 4 pp.

### BUILDING HARDWARE—See Hardware

### BULLETIN BOARDS

**R. W. Clark Mfg. Co.**, 1774 Wilson Ave., Chicago, Ill.

443. *Own Your Directory and Bulletin Boards of Character and Service*. Two pamphlets describing the Clark Changeable Bulletin Boards and Directories for Hotels, Club Houses, Business Blocks, etc. Each 4 pp. Ill.  $6\frac{1}{4} \times 9\frac{1}{2}$  in.

**The Tablet & Ticket Co.**, 1015-1021 West Adams Street, Chicago, Ill.

516. *T. & T. Changeable Bulletin Display Boards*. Describes bulletin boards with changeable type which has a self-spacing device so the lettering always looks neat and regular. 24 pp. Ill.  $6 \times 9$  in.

### CABINETS

**Hess Warming & Ventilating Co.**, 1204-7 Tacoma Building, Chicago, Ill.

386. *The Hess Sanitary Medicine Cabinet Lockers and Mirrors*. Description with details of an enamelled steel medicine cabinet for bathrooms. 20 pp. Ill.  $4 \times 6$  in.

### CASEMENTS—See Doors and Windows

### CEILINGS, METAL

**The Edwards Manufacturing Company**, Cincinnati O.

193. *Pamphlet* of 32 pages describing metal ceilings and wainscoting. Well illustrated, with list prices and rules for estimating.  $7 \times 10$  in.

### CEMENT

**Carney Cement Company**, Mankato, Minn.

448. *The Bond That Guarantees the Well*. Attractive catalog for architects, engineers, contractors and dealers. Describes fully the characteristics, durability and economy of this nature-mixed cement that requires no lime. Contains simple formula for mixing and illustrations of Carney-laid buildings. 20 pp. Ill.  $8\frac{1}{2} \times 11$  in.

**Kridler Building Material Co., Inc.**, 422 East 3rd St., New York, N. Y.

418. *Durastone Brand Cement*. A description of a cement which matches any stone or marble, any color or texture. Can be cast in molds and also used for walls or plain surfaces. Illustrations are given of beautiful work executed with this material. 12 pp.  $8\frac{1}{2} \times 11$  in.



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**CEMENT**

**Louisville Cement Company, Inc.,** Louisville, Ky.

518. *Brickment for Perfect Mortar.* Attractive booklet, with tabbed cover for filing, containing information, in both descriptive and tabular form, regarding the physical properties and manufacture of this special cement for brick and stone work. Contains reports of testing laboratories and contractors on results attained with its use. Size  $8\frac{1}{2} \times 11$  in. 20 pp. illustrated.

**CHUTES—See also Laundry Equipment**

**Edwin A. Jackson & Bro., Inc.,** 50 Beekman St., New York.

171. Booklet showing general construction and size of chutes to receive coal. Two types are built into the foundation wall with glass panel in place of cellar window; another type is placed flush with the ground, and is placed adjacent to wall, or can be placed near the street curb. Size  $3\frac{1}{2} \times 6\frac{1}{4}$  in. 16 pp.

**CLOCKS**

**Landis Engineering and Manufacturing Co.,** Waynesboro, Penna.

429. *Landis Electric Time and Program System.* A collection of bulletins No. 100, 110, 120, 130, 150 and 160, dealing with master and secondary clocks, equipment, time stamps, etc. Bound in expandable filling cover of tough paper. 48 pp. Ill.  $8\frac{1}{2} \times 11$  in.

**COLUMNS**

**Lally Column Co., of New York,** 334 Calver St., Brooklyn, N. Y.

121. *Lally Columns. Handbook.* Detailed construction diagrams for various types of steel construction. The text describes advantages of endurance and economy of the column. Various tests, tables of sizes, dimensions, weight, capacities and price given. Size  $7\frac{3}{4} \times 10\frac{3}{4}$  in. 48 pages.

**CONDUITS—See Pipe****DAMP-PROOFING—See also Waterproofing****DECORATIVE FABRICS**

**Flambeau Shops, Inc.,** 7 East 39th St., New York, N. Y.

420. *Hand Woven Fabrics.* A four-page circular with an artistically designed cover describing the work of the Flambeau Shops, Inc. Here are woven in any combination of colors, or to any special design, fabrics to suit the decorative scheme of a client. This includes draperies, wall hangings, bed coverings, rugs, etc., all executed on hand looms.

**DOORS AND WINDOWS**

**Art Metal Construction Company,** Jamestown, N. Y.

413. *The Interior System of Architectural Hollow Metal.* A loose leaf binder containing 38 sheets of details and 12 pages of description and specification of hollow metal doors, sash and trim.

**Crittall Casement Window Company,** 2703 E. Atwater Street, Detroit, Mich.

247. *Catalog No. 18. Crittall Universal Casements.* Contains complete description of steel casement windows for banks, schools, residences, churches, hospitals, etc., with details showing construction when set direct in masonry or with auxiliary frames. Sample specification enclosed 56 pp. Ill.  $9 \times 12$  in.

**Dahlstrom Metallic Door Co.,** Buffalo and East 2nd St., Jamestown, N. Y.

201. *Architectural Portfolio.* A collection of various designs and types of Dahlstrom Doors, drawings and details of each style or type. Mailed free only to architectural offices. 30 pp. Ill.  $14 \times 18$  in.

202. *Architectural Catalogue.* An illustrated catalogue showing standard styles and types of Dahlstrom hollow metal doors and interior trim. Various types of frames and other architectural shapes are also illustrated. 46 pp. 11 sections.  $10 \times 14$  in.

**Henry Hope & Sons,** 103 Park Ave., New York.

65. *Hope's Casements and Leaded Glass.* Portfolio. Gives specifications, description and photo-engraving, of Hope Casements in English and American Architecture, full size details of outward and inward opening and pivoted casements, of residential and office types. Size  $12\frac{1}{4} \times 18\frac{1}{2}$  in. 32 pp.

**The Kinnear Mfg. Co.,** Columbus, Ohio.

455. *Steel Rolling and Folding Doors and Shutters. Catalog No. 52.* This catalog is devoted to service doors adaptable to buildings of all classes, piers, factories, warehouses, etc. Illustrates their use and contains tables for designers and detailers. 96 pp. Ill.  $8 \times 11$  in.

**The Lunken Window Company,** 4022 Cherry Street, Cincinnati, Ohio.

354. *Lunken Windows.* The Lunken Window allows a full 100% opening thus obtaining for a sash window all the merits, with none of the glaring demerits, of French windows. This booklet tells how this is done. 12 pp. Ill.  $4 \times 9\frac{1}{2}$  in.

352. *Baby Book of Details for Lunken Windows.* One for heavy construction and one for light construction. Each book contains 20 pages of line drawings of details for use of draftsmen. Convenient pocket size.  $3 \times 5\frac{1}{4}$  in.

**S. H. Pomeroy Company,** 282 East 134th St., New York, N. Y.

203. *Underwriters' Laboratory Fire Retardant Windows.* A valuable book containing the Underwriters' specifications for fire retardant windows; at the same time being a complete catalog of windows built to meet the specifications. 67 pp. Ill.  $6\frac{1}{4} \times 8\frac{1}{2}$  in.

**Truscon Steel Company,** Youngstown, Ohio.

315. *Truscon Steel Sash.* A catalog containing designing data, tables and views of Stock Sash installations. 6 pp. Ill.  $8\frac{1}{2} \times 11$  in.

**Truscon Steel Company,** Youngstown, Ohio.

348. *Truscon Steel Sash.* This handbook has been prepared for detailers and specification writers. The descriptions are clear and the details are complete. 80 pp. Ill.  $8\frac{1}{2} \times 11$  in.

**DRAFTING MATERIALS**

**American Lead Pencil Co.,** 220 Fifth Ave., New York, N. Y.

268. *Booklet C-20. Venus Pencil in Mechanical Drafting.* An interesting illustrated booklet showing the possibilities of the Venus Drawing Pencil for drafting.  $6 \times 9$  in.

**Joseph Dixon Crucible Company,** Pencil Department, Jersey City, N. J.

325. *Finding Your Pencil.* A book explaining the various degrees of hardness of the Eldorado pencil and the grade most suitable for every man who uses a pencil be he business or professional man, clerk or draftsman. Accompanied by a color chart of Dixon colored crayons. 16 pp. and 4 pp. in color chart. Ill. in colors.  $3\frac{1}{4} \times 6$  in.

**DRAINS—See also Plumbing Equipment****DRYERS**

**Airdry Corporation,** Groton, N. Y.

480. *Airdry. The Electric Towel.* This booklet describes a machine which supplants all kinds of towels in offices, hotels, stores, etc. Data are given of cost of operation compared with towels with a list of users. 10 pp. Ill.  $8 \times 11$  in.

**DUMBWAITERS—See also Elevators**

**Sedgwick Machine Works,** 144 West 15th Street, New York.

60. *Hand Power Elevators and Dumbwaiters in Modern Architectural Construction.* Illustrated catalogue.  $4\frac{1}{2} \times 8\frac{1}{4}$  in. 80 pp.

**ELECTRICAL EQUIPMENT—See also Lighting**

**Frank Adam Electric Co.,** St. Louis, Mo.

296. *Catalog No. 25.* A catalog and price list of knife switches switch boards, panel boards, steel cabinets, switch board material. 83 pp. Ill.  $8 \times 10\frac{1}{2}$  in.

**Harvey Hubbell, Inc.,** Bridgeport, Conn.

297. *Electrical Specialties. Catalog No. 17, 1921.* This catalog contains descriptions with prices of the thousand and one items connected with electric light, electrical alarm and small electrical appliance installations in modern buildings. 104 pp. Ill.  $8 \times 10\frac{1}{2}$  in.

**ELEVATORS—See also Dumbwaiters and Hoists**

**Elevator Locks Co.,** 119 No. Washington St., Peoria, Ill.

338. *A Sign of Safety.* Describes devices for mechanically locking power and automatically locking gates of elevators, and control landing. Contains also list of users of this equipment. 26 pp. Ill.  $4 \times 9\frac{1}{2}$  in.

**Kimball Brothers Company,** Council Bluffs, Iowa.

336. *Kimball Elevators.* An illustrated catalog of hand power, sidewalk, and garage elevators and dumbwaiters and electric passenger, freight and push button elevators. 32 pp. Ill.  $7\frac{3}{4} \times 10\frac{1}{2}$  in.

**Osli Elevator Co.,** 260 Eleventh Ave., New York, N. Y.

251. *Electric Traction Elevators.* An illustrated catalog describing gearless traction elevators. 28 pp.  $8\frac{1}{2} \times 11$  in.; and an illustrated catalog describing worm gear traction elevators. 24 pp.  $6 \times 9$  in.

**Richards-Wilcox Mfg. Co.,** Aurora, Ill.

335. *"Ideal" Elevator Door Equipment.* Catalog showing elevator door hangers for one, two and three speed doors, also doors in pairs and combination swing and slide doors. Door closers and checks. 24 pp. Ill.  $8\frac{1}{2} \times 11$  in.

**A. B. See Electric Elevator Co.,** 52 Vesey St., New York.

169. Photographs and description in detail of elevator equipment manufactured by the A. B. See Electric Elevator Co. Size  $6 \times 8$  in.

**ESCALATORS**

**Osli Elevator Co.,** 260 Eleventh Ave., New York, N. Y.

263. *Escalators.* An illustrated catalog describing escalators, with layouts of typical installations. 36 pp.  $6 \times 9$  in.

**FENCE**

**The Stewart Iron Works Company,** Cincinnati, Ohio.

456. *Book of designs "B."* A book of fence designs full of suggestions for architects. All illustrations are from photographs. 80 pp. Ill.  $9\frac{1}{2} \times 12$  in.

**FINANCING OF ENTERPRISES**

**The Hockenbury System, Incorporated,** Penn-Harris Trust Building, Harrisburg, Pa.

313. *Your Hospital and Its Financing.* An educational work on how to finance a new hospital project and obtain funds for needed extensions to existing institutions. Illustrations are given of six institutions in five states financed by the methods, and through the work of the Hockenbury specialists. 20 pp. Ill.  $4\frac{1}{4} \times 8\frac{1}{2}$  in.

314. *Financing Your City's New Hotel.* A plan is here offered to the enterprising architect whereby his ideas for a new hotel for his home city may be realized. Hotels financed through the work of the Hockenbury specialists are shown, together with testimonials from local business men. 20 pp. Ill.  $4\frac{1}{4} \times 8\frac{1}{2}$  in.

**S. W. Straus & Co.,** 565 Fifth Ave., New York, N. Y.

- 183R. *Forty Years Without Loss to Any Investor.* A book describing the Straus Plan of investments. This firm underwrites and sells only first mortgage serial bonds secured by newly improved income producing properties, or high grade industrial properties. 37 pp. Ill.  $5 \times 8$  in.





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## REFERENCE LIST OF BUSINESS LITERATURE—Continued

**FIRE DOORS AND SHUTTERS—See Doors and Windows**  
**FIREPLACES AND MANTELS**

**Chattanooga Roofing and Foundry Co.,** Chattanooga, Tenn.

143. *The Magic Hearth Leaflets.* With instructions to build an open fireplace, section drawings, illustrations of fireplace equipment grates, firebacks, cranes, andirons, etc. Size  $8\frac{1}{2} \times 11$  in. 10 pp.

**Colonial Fireplace Company,** 4611 West Roosevelt Road, Chicago, Ill.

479. *Fireplace Equipment.* A catalog and price list of andirons, modern dampers, fenders, fire-sets, screens, thresholds, etc., together with valuable information about the proper construction of fireplaces. 20 pp. Ill.  $8\frac{1}{2} \times 11$  in.

**H. W. Covert Co.,** 137 East 46th St., New York.

70. *Hints on Fireplace Construction.* Diagrams of construction, and installation of Covert "Improved" and "Old Style" dampers and smoke-chambers, and other fireplace accessories. Size  $5\frac{1}{2} \times 8\frac{1}{4}$  in. 12 pp.

**Edwin A. Jackson & Bro., Inc.,** 50 Beekman St., New York.

92. *Dampers, Chutes, Doors and Dumps.* Illustrated catalog. Equipment and appurtenances of various types, construction and installation, data, dimensions and prices.

103. *Franklin Stoves.* Illustrated booklet containing plans, sections and photographs of this Colonial stove, including type heating on two floors. 12 pp.  $7 \times 7$  in.

**Peerless Manufacturing Company, Inc.,** Louisville, Ky.

513. *The Lure of the Fireplace.* This booklet contains information and diagrams for the design and building of fireplaces, together with descriptions of modern domes and dampers so that a fireplace will work effectively at all times. Contains many illustrations of tasteful mantel designs. 24 pp. Ill.  $5 \times 7$  in.

**FIRE PROTECTION—EQUIPMENT**

**Jiffy Fire Hose Rack Co.,** 133 West 52nd St., New York, N. Y.

266. *Stand Pipe Equipment.* An illustrated catalog showing complete installations of stand pipe equipment. 31 pp.  $7 \times 9$  in.

**FLOORING, SUB—See also Stucco Base****FLOORING**

**Armstrong Cork Co., Linoleum Department,** Lancaster, Pa.

222. *Business Floors.* A handy reference on floors for public and semi-public buildings, containing specimen specifications, directions for laying and other helpful data. Illustrated in color.  $6 \times 9$  in.

**Congoleum Company, Inc.,** Philadelphia, Pa.

428. *The Gold Seal Specification.* Contains specifications for laying Linoleum and Cork Carpet according to methods perfected after years of experiment and careful research. 2 pp.  $8\frac{1}{2} \times 11$  in.

429. *Linoleum Service Sheet 1; No. 40.* A sheet containing detail sketches drawn to scale for applying linoleum to floors; over thresholds; on staircases; under radiators; etc. The reverse contains description of materials and complete detailed specifications for laying linoleum.  $17 \times 22$  in., folded to  $8\frac{1}{2} \times 11$  in.

**The Long-Bell Lumber Co.,** R. A. Long Building, Kansas City, Mo.

204. *The Perfect Floor.* Tells how to lay, finish and care for Oak Flooring. 16 pp. 14 Illus.  $5\frac{1}{4} \times 7\frac{1}{4}$  in.

**The Marbleoid Co.,** 461 Eighth Ave., New York.

61. *The Universal Flooring for Modern Buildings.* Illustrated booklet. Describes uses and contains specifications for Marbleoid flooring, base, wainscoting, etc. Size  $6\frac{3}{4} \times 9\frac{3}{4}$  in. 32 pp.

**Franklin R. Muller Co.,** Waukegan, Ill.

212. *Asbestos Flooring Composition.* A book describing uses of and giving specifications and directions for Composition Flooring, Base, Wainscoting, etc.  $8\frac{1}{2} \times 11$  in. Ill.

**Oak Flooring Advertising Bureau,** 1014 Ashland Block, Chicago, Ill.

493. *Modern Oak Floors.* A book that tells the complete story of Oak Flooring. 24 pp. Ill.  $6\frac{1}{4} \times 9\frac{1}{4}$  in.

**W. & J. Sloane,** Selling Agents, New York, N. Y.

439. *Nairn Inlaid and Printed Linoleum.* A 68-page book illustrated in colors. Shows patterns of linoleums with views of attractive interiors in which linoleum covered floors from part of the decorative scheme.  $6 \times 9$  in.

440. *Nairn Samples.* A sample book of plain linoleum and one of cork carpet, each  $4\frac{3}{4} \times 8\frac{1}{4}$  in., bound in cloth. A third sample book contains samples of inlaid and printed linoleum.  $3 \times 6$  in.

**FLOORS—See Building Construction****FURNACES—See Heating****GARAGE CONSTRUCTION—See also Building Construction****GARBAGE DESTROYERS**

**Kerner Incinerator Company,** 1029 Chestnut St., Milwaukee, Wis.

384. *The Sanitary Elimination of Household Waste. M-3 Folder.* Description of construction, installation and operation of the Kernerator for residences. Illustrated by views of residences in which the Kernerator is installed, with cuts showing all details. 15 pp. Ill.  $4 \times 9$  in.

**GARBAGE RECEIVERS**

**Edwin A. Jackson & Bro., Inc.,** 50 Beekman St., New York.

170. Booklet showing general construction and sizes of garbage receivers to be placed underground for suburban use; also types to be built into the wall of city homes and apartments; also types for suburban wall with opening on inside for the maid and outside for the garbage man. Size  $3\frac{1}{2} \times 6\frac{1}{4}$  in. 16 pp.

**GARDENS**

**Julius Roehrs Company,** Rutherford, N. J.

406. The Ten-Ten books issued three times a year—covering nursery stock in general, such things as fruit trees, roses and perennials. Also one general greenhouse catalog, listing orchids and greenhouse plants.

**GLASS**

**Plate Glass Manufacturers of America,** First National Bank Bldg., Pittsburgh, Pa.

484. *The Part that Plate Glass Plays in the Life of Every Man.* An illustrated folder describing the many uses of plate glass. Ask also for special circular for work in hand. 6 pp. Ill. in color.  $3\frac{1}{2} \times 6\frac{1}{4}$  in.

**GLASS CONSTRUCTIONS**

**Frederick L. Koppler,** 1799 First Ave., New York, N. Y.

368. *Bulletin No. 207.* Describes Keppler Rooflights and tells why they are permanent, how to install them, etc., together with all necessary data for designers. 4 pp. Ill.  $8\frac{1}{2} \times 11$  in.

**GRANITE—See Stone****GREEN HOUSES—See Glass Constructions****GUTTERS AND DOWNSPOUTS—See also Roofing**

**The New Jersey Zinc Co.,** 160 Front Street, New York, N. Y.

226. *Zinc Spouting.* Describes leaders, gutters, etc. "Made from Horse Head Zinc," giving information concerning their economy and durability. 8 pp. Ill.  $6 \times 9$  in.

**HARDWARE**

**The Casement Hardware Co.,** 5 North La Salle Street, Chicago, Ill.

489. *"Win-dor" Catalog.* A pamphlet describing Bull-dog adjusters and Hook-fast fasteners for casement windows. 88 pp. Ill.  $8\frac{1}{4} \times 10\frac{1}{2}$  in.

490. *The Casement Window Hand-book.* A book dealing with the advantages of casement windows and describing casement window hardware. 30 pp. Ill.  $4\frac{1}{4} \times 5\frac{1}{4}$  in.

**The Kawneer Co.,** Niles, Mich.

142. *Kawneer Simplex Window Fixtures.* Booklet Illustrated. Drawings, photographs and text describes weightless, reversible window fixture, its ease of installation, ventilation and light control. Size  $8\frac{1}{2} \times 10\frac{3}{4}$  in. 16 pp.

**Monarch Metal Products Co.,** 5020 Penrose St., St. Louis, Mo.

438. *Monarch Casement Hardware.* A book describing hardware for casement windows. This Manual and folder comply with all suggestions made by the Structural Service Committee of the A. I. A. 18 pp. Ill.  $7\frac{1}{2} \times 10\frac{1}{2}$  in., in heavy folder for vertical file properly indexed.

**Pullman Mfg. Co.,** 220 South Ave., Rochester, N. Y.

485. *Pullman Unit Sash Balances.* The Pullman Unit Sash Balance is a coiled spring in a housing that replaces weights and cords. This book tells why it costs less on nearly all installations; why it is better in all respects; and gives a list of important buildings in which this balance is in satisfactory use. Contains blue print sheet of details. 12 pp. Ill.  $8 \times 11$  in.

**Richards-Wilcox Mfg. Co.,** Aurora, Ill.

336. *Modern Hardware for Your Home.* Catalog of hangers for vanishing French doors; "Air-Way" multifold hardware for sun parlors and sleeping porches; "Slidetite" garage door hardware. 24 pp. Ill.  $8\frac{1}{2} \times 11$  in.

435. *Distinctive Garage Door Hardware. Catalog No. A-22.* This is more than a catalog. It is a treatise for architects and builders on the door equipment of garages, covering sliding, folding and combination sliding and folding doors, with their hardware. 94 pp. Ill.  $8\frac{1}{2} \times 11$  in.

436. *Sliding Door Hardware. Catalog No. A-17.* A catalog of sliding door hardware of Parallel, Accordion and Flush Door partitions. 32 pp. Ill.  $7 \times 10$  in.

**Sargent & Company,** New Haven, Conn.

478. *Sargent Locks and Hardware, 1922.* The latest complete catalog of locks, hardware, small tools, etc. 1018 pp. Ill.  $9 \times 12$  in.

**The Stanley Works,** New Britain, Conn.

11. *Wrought Hardware. New 1921 Catalog.* This new catalog describes additions to the Stanley line of Wrought Hardware, as well as the older well known specialties and various styles of butts, hinges, bolts, etc. 376 pp. Ill.  $6\frac{1}{2} \times 9\frac{1}{2}$  in.

12. *Garage Hardware.* Booklet, illustrated. Garages and their equipment, such as hinges, hasps, door holders, latch sets, chain and hand bolts, showing illustrations and text with dimensions of garages, describing the Stanley Works product. Size  $6 \times 9$  in. 24 pp.

13. *Eight Garages and Their Stanley Hardware.* Booklet. Plans, drawings and complete hardware specifications. Size  $5 \times 7$  in. 32 pp.

127. *The Stanley Works Ball Bearing Butts.* Booklet, illustrated. Description with full size illustrations of many typed butts and their parts, dimensions and finish. Size  $5 \times 7\frac{1}{2}$  in. 32 pp.





Photos show Insurance Building, Olympia, Washington. Architects: Wilder & White, New York.

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linoleum to be used on the decks of U. S. battleships, *Gold-Seal Battleship Linoleum* lasts indefinitely on business floors.

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## REFERENCE LIST OF BUSINESS LITERATURE—Continued

## HARDWARE

The Stanley Works, New Britain, Conn.

495. *Stanley Detail Manual*. A catalog in loose leaf binder, consisting of five sections on Butts, Bolts, Blind and Shutter Hardware, Stanley Garage Hardware, Screen and Sash Hardware. Detail drawings are given, showing clearness and other data needed by detailers. 116 pp. Ill.  $7\frac{1}{2} \times 10\frac{1}{4}$  in.

Vonnegut Hardware Co., Indianapolis, Ind.

309. *Von Duprin Self-Releasing Fire Exit Devices*. A catalog and educational work on panic-proof, burglar-proof self-releasing exit devices for doors and windows of buildings of any kind of occupancy. 41 pp. Ill.  $8 \times 11$  in.

310. *Prince Self-Releasing Fire Exit Devices. Supplement to Von Duprin Catalog No. 12*. Contains valuable information for architects on the selection, detailing, etc., of Prince devices for doors and windows to insure safety against fire panic. 32 pp. Ill.  $8 \times 11$  in.

## HEATERS—See Water Heaters

## HEATING

Alberger Heater Company, Buffalo, N. Y.

307. *Heating and Cooling Equipment. Catalog No. 3*. A useful manual for architects in addition to serving as a catalogue of heating and cooling equipment. Explains fully the advantages of spirally corrugated heater tubing. 48 pp. Ill. with line cuts and half tones.  $7\frac{3}{4} \times 10\frac{3}{4}$  in.

American Radiator Company, 104-108 W. 42nd St., New York, N. Y.

427. *Ideal-Arcola Heating Outfits*. A book describing a system of hot water heating for small and medium size houses. The boiler is placed in a room and resembles a stove. No cellar required. The ash carrying reduced to a minimum. 24 pp. Ill.  $6 \times 8\frac{1}{2}$  in.

Crane Company, 836 So. Michigan Ave., Chicago, Ill.

241. *Steam Catalogue*. A book containing full descriptions of the complete line of Crane valves, fittings, etc., 800 pp. Ill.  $6 \times 9$  in.

The Farquhar Furnace Company, Wilmington, Ohio.

355. *Healthful Helpful Hints*. A discussion of furnace and chimney design and capacity for hot air heating and ventilation. 16 pp. Ill.  $4\frac{3}{4} \times 9\frac{1}{4}$  in.

356. *A Plain Presentation to Dealers*. A book of selling talk for dealers in Farquhar Furnaces. Four model heating layouts are shown and there is a page of useful "Do and Don't" advice. 24 pp. Ill.  $8\frac{1}{2} \times 11$  in.

Hess Warming & Ventilating Co., 1209 Tacoma Bldg., Chicago, Ill.

178. *Modern Furnace Heating*. An illustrated book on the Hess Welded Steel Furnaces, Pipe and Pipeless, notes for installation, sectional views, showing parts and operation, dimensions, register designs, pipes and fittings. Size  $6 \times 9\frac{1}{2}$  in. 48 pp.

Illinois Engineering Co., Racine Ave., at 21st St., Chicago, Ill.

501. *Illinois Heating Systems. Vapor Details Bulletin 20*. This bulletin contains typical plans and elevations of heating systems, with description of details and "Standards for Computing Radiation and Boiler Sizes" of the Chicago Master Steam Fitters Association. 18 pp. Ill.  $8 \times 10\frac{3}{4}$  in.

502. *Illinois Bulletins. No. 102* contains detailed description with capacities and dimensions of Eclipse Pressure Reducing Valves. 20 pp. Ill. Nos. 202, 302, 452, 502 and 703 describe, with illustrations, Steam Specialties, Back Pressure Valves, Stop and Check Valves, Exhaust Heads, Balanced Valves, Separators, Steam Traps.

Jenkins Bros., 80 White St., New York, N. Y.

235. *Catalog No. 21*. This catalog contains descriptions of all the valves, packing, etc., manufactured by Jenkins Bros. Includes also dimensions and price lists of valves and parts. 271 pp. Ill.  $4 \times 6\frac{1}{4}$  in. Stiff paper cover.

237. *The Valve Behind a Good Heating System*. This booklet describes Jenkins Radiator Valves, Automatic Air Valves and other valves used in connection with steam and hot water heating. 16 pp. Ill.  $4\frac{1}{2} \times 7\frac{3}{4}$  in. Stiff paper cover.

Johnson Service Company, 149 Michigan St., Milwaukee, Wis.

301. *The Regulation of Temperature and Humidity*. A description of the Johnson System of temperature regulation and humidity control for buildings; showing many kinds of thermostatic appliances for automatically maintaining uniform temperatures. 62 pp. Ill.  $8\frac{1}{2} \times 11$  in.

302. *Johnson Electric Thermostats Valves and Controllers*. A catalog of devices mentioned in the title. 24 pp. Ill.  $3\frac{1}{2} \times 6$  in.

Richardson & Baynton Co., New York, N. Y., Chicago, Ill., Philadelphia, Pa., Providence, R. I., Boston, Mass.

290. *The Richardson Vapor-Vacuum Pressure Heating System*. An interesting book which presents in clear non-technical language the principles of Vapor-Vacuum Pressure heating; the economy over ordinary steam heating; steam and hot-water systems may be altered to use this principle with views of buildings where the V-V-P system is installed. 14 pp. Ill.  $8 \times 11$  in.

291. *Perfect Warm Air Furnaces. No. 203*. Contains a full description of various types of warm air furnaces and parts, with dimensions and necessary data. 24 pp. Ill.  $8 \times 10\frac{1}{2}$  in.

292. *Perfect Cooking Ranges*. Description and dimensions of the complete line of the new high enamel finish Richardson Perfect ranges with charts and information regarding combination coal and gas cooking ranges. 40 pp. Ill.  $8\frac{1}{2} \times 11$  in.

The H. B. Smith Co., Westfield, Mass.

431. *General Boiler & Radiator Catalog*. A descriptive catalog giving ratings, dimensions, capacities and working pressures. 90 pp. Ill.  $4 \times 7$  in.

432. *Heating Data Books*. One is an Engineers' Data Ring Book. 125 pp. Ill.  $4 \times 7$  in. Others consist of loose leaf binders to hold special matter.  $8\frac{1}{2} \times 11$  in.

Tuttle & Bailey Mfg. Co., 2 West 45th St., New York, N. Y.

395. *About Radiator Enclosures*. A booklet showing how easily and effectively unsightly radiators may be concealed by enclosures which adorn a room. 15 pp. Ill.  $6\frac{3}{4} \times 9\frac{1}{4}$  in.

396. *Special Designs. Catalog 66A*. A book of designs for grilles, screens, registers and ventilators to be used in connection with heating installations. Made of bronze, brass, iron and steel. 40 pp. Ill.  $6\frac{3}{4} \times 9\frac{3}{4}$  in.

## HEATING AND VENTILATION

American Blower Co., Detroit, Mich.

361. *Sirocco Service*. A monthly publication containing descriptions of heating and ventilating systems installed by the American Blower Company, together with useful data for architects and engineers. 16 pp. Ill.  $8\frac{1}{2} \times 11$  in.

362. *General Catalog "ABC" Products*. A book full of useful data for all men who have to deal with heating and ventilating problems. 132 pp. Ill.  $8\frac{1}{2} \times 11$  in.

Buffalo Forge Co., 490 Broadway, Buffalo, N. Y.

215. *Buffalo Fan System of Heating, Ventilating and Humidifying. Catalog 700*. This contains a general discussion of heating and ventilating under four heads: Part 1, public Buildings. Part 2, Industrial Plants. Part 3, Buffalo Apparatus. Part 4, Fan Engineering.

The H. W. Nelson Corporation (formerly Moline Heat), Moline, Ill.

411. *Univent Ventilation. Architects' and Engineers' Edition*. A scientific treatise on ventilation for schools, offices and similar buildings; with 40 pages of engineering data on ventilation for architects and engineers. 72 pp. Also "Supplement A" on Air Conditioning. 12 pp. Ill. with half-tones, line drawings and designing charts.  $8\frac{1}{2} \times 11$  in.

## HEAT REGULATORS

Minneapolis Heat Regulator Co., Minneapolis, Minn.

134. *The Heart of the Heating Plant*. An illustrated catalog, describing the Minneapolis Heat Regulator, its construction, application and operation for the automatic control of temperature where coal, gas, fuel oil or street steam is used. Complete catalog and list prices. Size  $6 \times 9$  in. 20 pp.

## HOISTS—See Elevators and Ash Hoists

## INCINERATORS—See Garbage Destroyers

## INSULATION—See also Stucco Base

Insulite Division, Minnesota & Ontario Paper Company, International Falls, Minn.

487. *Universal Insulite in Building Construction*. Describes a clean, sanitary, odorless and vermin proof board made from selected waterproofed wood fibres, felted into light, strong, uniform sheets. Examples are given of use indoors and outdoors, together with details and useful data. 37 pp. Ill.  $8\frac{1}{2} \times 11$  in.

United States Mineral Wool Co., 280 Madison Ave., New York.

83. *The Uses of Mineral Wool in Architecture*. Illustrated booklet. Properties of insulation against heat, frost, sound, and as a fire-proofing, with section drawings and specifications for use. It gives rule for estimate and cost. Size  $5\frac{1}{4} \times 6\frac{5}{8}$  in. 24 pp.

## IRON AND STEEL—See also Metals

The American Rolling Mill Co., Middletown, Ohio.

233. *Armo in Picture and Fact*. A booklet describing the manufacture of pure iron in sheets and giving useful tables of sheet sizes and weights. 247 pp. Ill.  $6 \times 11$  in.

234. *Why Steel and Iron Rust*. A booklet full of interesting data. 16 pp. Ill.  $3\frac{1}{4} \times 6\frac{1}{4}$  in.

## KITCHEN EQUIPMENT

Bramhall, Deane Co., 261-A West 36th St., New York.

59. *The Heart of the Home*. Booklet, illustrated. Deane's French Ranges (all fuels), cook's tables and plate warmers. Size  $6 \times 9$  in. 32 pp.

The Prometheus Electric Co., 513 West 42nd St., New York.

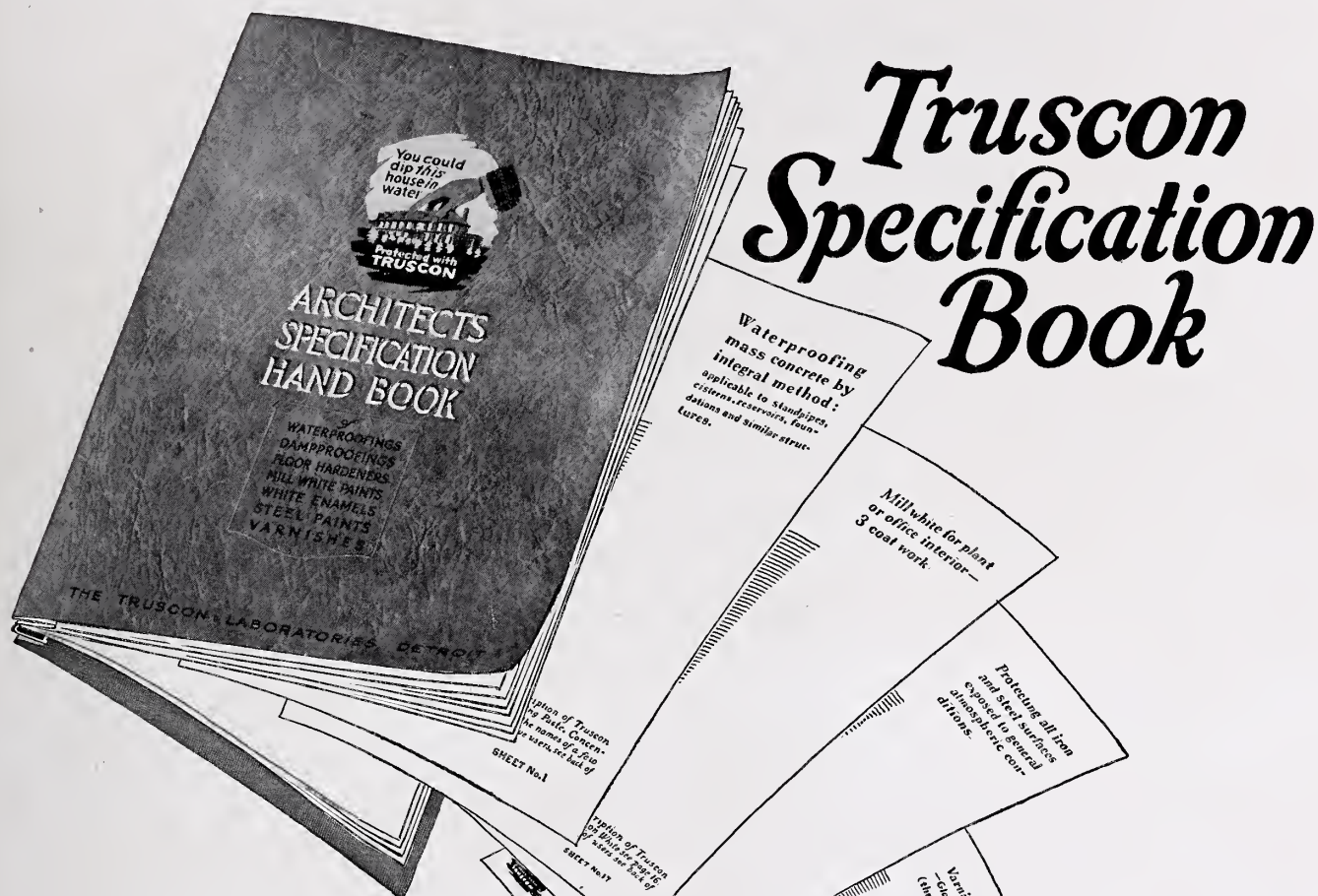
145. *Prometheus Electric Plate Warmers*. Leaflets illustrating the plate warmer, describing its construction, utility and types, adaptable for residences and hotels, according to specifications. Sizes and dimensions. Size  $5\frac{1}{2} \times 9$  in.

## LATH METAL

American Steel & Wire Co., Chicago, Ill.

228. *Stucco Houses Reinforced With Triangle Mesh Fabric*. A pamphlet containing valuable data on stucco work with tables of quantities of materials and many illustrations of houses covered with stucco applied on Triangle Mesh Fabric. 24 pp. Ill.  $6 \times 9$  in.





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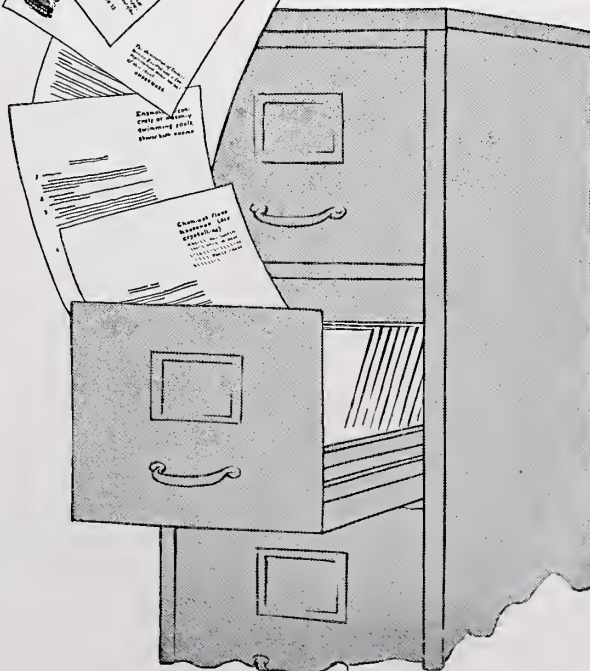
Each sheet is a clear, straight, concise specification. Facts regarding the product are consigned exclusively to the back of the sheet. The book is thoroughly indexed with descriptive titles printed in the upper right hand corner of each specification.

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## REFERENCE LIST OF BUSINESS LITERATURE—Continued

## LATH METAL

- Concrete Engineering Co., Omaha, Neb.**  
 346. *How to Use Ceco Lathing Materials.* An illustrated treatise on the use of expanded metal lath. Contains construction details and complete specifications, with sample piece of lath in pocket on cover of book. 16 pp. Ill. 8½ x 11 in.
- Truscon Steel Company, Youngstown, Ohio.**  
 316. *Hy-Rib and Metal Lath.* Tables, general data and illustrations of Hy-rib and metal lath construction. 6 pp. Ill. 8½ x 11 in.

## LAUNDRY EQUIPMENT

- The American Laundry Machinery Co., Advertising Dept., Cincinnati, Ohio.**  
 84. *Catalog.* Illustrated. Washing machines, accessories, extractors, clothes tumblers, drying and ironing machines, etc., showing various types and electrical controls with specifications and dimensions for the installation and use of laundry machinery in laundries, institutions, hotels; also for mill and community laundries. Size 12½ x 9½ in. 218 pp.
- Chicago Dryer Co., 2210 N. Crawford Ave., Chicago, Ill.**  
 66. *Laundry Appliances.* Illustrated catalog. Descriptions of Laundry Dryers, Electric Washing Machines and Ironing Machines, especially adapted for use in residences, apartment buildings and small institutions. Size 8½ x 11 in. 48 pp.
- The Pfaudler Co., Rochester, N. Y.**  
 322. *Pfaudler Chutes for Economy.* Folder showing illustrations, drawings and description of the Pfaudler Laundry Chute giving dimensions for installations. Size 3¾ x 8¾ in. 8 pp.

## LIGHTING—See also Electrical Equipment

- I. P. Frink, Inc., 24th St. and 10th Ave., New York.**  
 150. *Light Service for Hospitals.* Catalogue 421. A booklet illustrated with photographs and drawings, showing the types of light for use in hospitals, as operating table reflectors, linolite and multilite concentrators, ward reflectors, bed lights and microscopic reflectors, giving sizes and dimensions, explaining their particular fitness for special uses. Size 7 x 10 in. 12 pp.
218. *Picture Lighting.* Booklet 422. A pamphlet describing Frink Reflectors for lighting pictures, art galleries, decorated ceilings, cove lighting, the lighting of stained glass, etc., and containing a list of private and public galleries using Frink Reflectors. 24 pp. Ill. 5¼ x 7 in.
219. *Frink Reflectors and Lighting Specialties for Stores.* Catalog No. 424. A catalog containing a description of the Frink Lighting System for Stores; the Synthetic System of Window Illumination; and a number of appliances to produce the most effective lighting of displayed objects. 20 pp. Ill. 8 x 11 in.
220. *Frink Lighting Service for Banks and Insurance Companies.* Reflectors. Catalog No. 425. A very interesting treatise on the lighting of offices; with details of illustrations and description of lamps and reflectors. Contains a list, covering several pages, of banks using Frink Desk and Screen Fixtures. 36 pp. Ill. 8¼ x 11 in.
- Harvey Hubbell, Inc., Bridgeport, Conn.**  
 401. *Hubbell Flush Door Receptacles.* Description of a safe, convenient and practical wall outlet de luxe for fine residences, clubs, hotels, public buildings and offices. 4 pp. Ill. 8 x 10 in.
- Lightoller Company, 569 Broadway, New York, N. Y.**  
 412. *After Sunset Lightollers.* A beautiful catalog and price list of electric lighting brackets and suspension fixtures. 16 pp. Ill. 8 x 10¼ in.
- Mitchell Vunee Co., Inc., 503-511 West 24th St., New York, N. Y.**  
 369. *Catalog No. 25.* A descriptive catalog, with prices, of the "T. R. B." Lighting Unit, for perfect distribution of light without glare and without shadows. 24 pp. Ill. 8 x 10 in.

## LIME

- The Ohio Hydrate & Supply Co., Woodville, Ohio.**  
 494. *A Job that Taak a Million Years.* A description of how limestone is formed and how it is later converted into lime. All the processes are shown in detail and the uses of lime are illustrated. 16 pp. Ill. 8½ x 11 in.

## LINCRUSTA-WALTON—See also Wall Covering

- The Lincrusta-Walton Company, Hackensack, N. J.**  
 519. *Lincrusta-Walton.* This book gives directions for buying, caring for and applying Lincrusta-Walton; together with color chart and many pages showing patterns. 67 pp. 8½ x 11 in. Ill. Bound in boards.

## LINOLEUM—See also Flooring

- Armstrong Cork Co., Linoleum Department, Lancaster, Pa.**  
 233. *Armstrong's Linoleum Floors.* A handbook for architects, published in the file form of (8½ x 11 in.) recommended by the American Institute of Architects. A technical treatise on Linoleum containing general information, tables of grades, gauges and weights, specimen specifications, and detailed directions for laying linoleum. Profusely illustrated in colors.

## LOCKERS, STEEL—See Factory Equipment

## LUMBER

- The Long-Bell Lumber Co., R. A. Long Building, Kansas City, Mo.**  
 203. *From Tree to Trade.* This book tells the story of the manufacture of lumber. Gives an idea of the scope of the business and the care and attention given to the manufacture and grading of Long-Bell trade-marked products. 100 illustrations. 48 pp. 8½ x 11 in.
- The Pacific Lumber Company of Illinois, 2060 McCormick Bldg., Chicago, Ill.**  
 363. *Construction Digest.* The use of California Redwood in residential and industrial construction. Contains illustrations, grading rules, specifications and other technical data for architects and builders. 16 pp. Ill. 8½ x 11 in.
364. *Engineering Digest.* The use of California Redwood in industrial construction and equipment for factories, railroads, mines and engineering projects. 16 pp. Ill. 8½ x 11 in.

## LUMBER, ASBESTOS

- Asbestos Shingles, Slate & Sheathing Co., Ambler, Pa.**  
 54. *Ambler Asbestos Building Lumber.* Catalog illustrated. Describes uses of this fireproof product for both exteriors and interiors. Tables of sizes and illustrations of various types of buildings in which it has been used. Size 8½ x 11 in. 32 pp.

## MAIL CHUTES

- Cutler Mail Chute Co., Rochester, N. Y.**  
 294. *The Cutler Mail Chute.* Model F. Describes the Cutler Mail Chute in its standard form, known as Model F. Contains data for preparatory work to be done before installation. 16 pp. Ill. 4 x 9¼ in.

## MANTELS

- Edwin A. Jackson & Bro., Inc., 50 Beekman St., New York.**  
 90. *Wood Mantels. Portfolio.* Woodmantel designs of various types and openings, giving dimensions, projections and showing fireplace grate designs. Size 9 x 6¼ in. 32 pp.

## MARBLE—See Stone.

## MEMORIALS

- Harrison Granite Co., 200 Fifth Ave., New York.**  
 151. *Memorials.* Booklet showing photographic illustrations and text of monumental pieces and memorials, of granite, ranging from monuments of public interest to simple private tributes. Size 4 x 9 in. 24 pp.

## METALS—See also Iron and Steel—Roofing

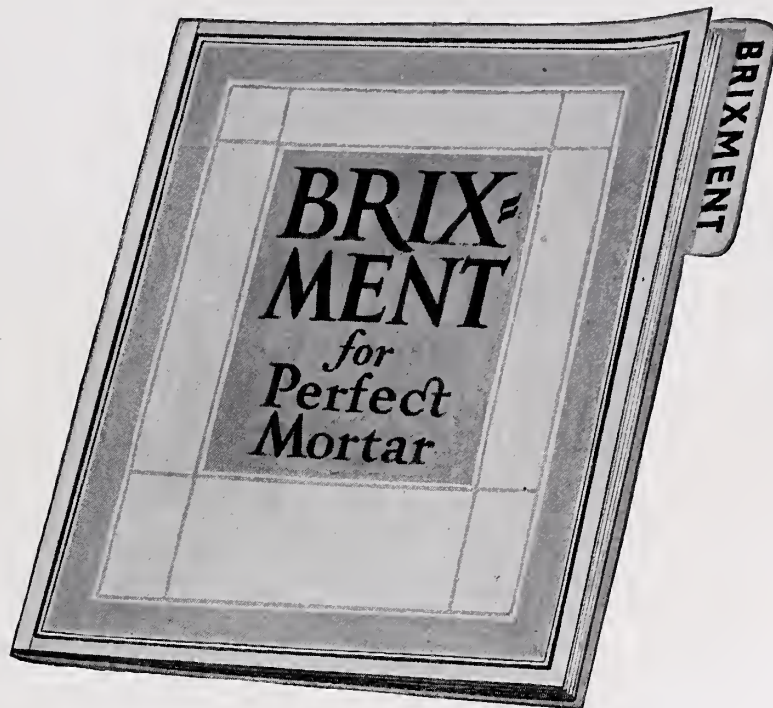
- American Brass Co., Main Office, Waterbury, Conn.**  
 138. *Price List and Data Book.* Illustrated. Loose-leaf Catalog. Covers entire line of Sheets, Wire Rods, Tubes, etc., in various metals. Useful tables. Size 3¾ x 7 in. 168 pp.
139. *Illustrated Pamphlets.* Describes the use and adaptability of Extruded Architectural Shapes, Benedict Nickel, Brass and Copper Pipe in Iron Pipe sizes for plumbing installations. 8½ x 11 in.
- American Sheet & Tin Plate Co., Frick Building, Pittsburgh, Pa.**  
 452. *Reference Book. Pocket Edition.* Covers the complete line of Sheet and Tin Mill Products. 168 pp. Ill. 2½ x 4½ in.
- Bridgeport Brass Co., Bridgeport, Conn.**  
 483. *Seven Centuries of Brass Making.* A brief history of the ancient art of brass making and its early (and even recent) method of production—contrasted with that of the Electric Furnace Process—covering tubular, rod and ornamental shapes. 80 pp. Ill. 8 x 10½ in.
- Copper & Brass Research Association, 25 Broadway, New York, N. Y.**  
 466. *How to Build a Better Home.* A book on building written for the prospective builder. It contains keyed illustrations of houses and details of houses and should be of value to architects in explaining technical terms to clients. 30 pp. Ill. 7¾ x 10½ in.
- Rome Brass & Copper Company, Rome, N. Y.**  
 473. *Price List No. 70.* A loose-leaf binder containing full price list of Rome Quality products, together with useful tables. 5½ x 7¼ in.
- Taunton-New Bedford Copper Co., Taunton, Mass.**  
 504. *Price List and Data Book.* Twenty-six sheets (52 pp.) in loose-leaf binder for holding additional sheets when added. Contains complete list of shapes, sheets, nails, bolts, etc., of brass, copper, manganese bronze, naval bronze, architectural bronze, soldering copper and yellow metal, with prices and weights. 4½ x 7 in.

## MILLWORK—See also Lumber—Building Construction—Doors and Windows

## MORTAR—See also Cement

- Louisville Cement Company, Inc., Louisville, Ky.**  
 311. *Briment, the Perfect Mortar.* The reading of this little book gives one a feeling that definite valuable information has been acquired about one of the oldest building materials. Modern science has given the mason a strong water-resisting mortar with the desirable "feel" of the best rich lime mortar. 16 pp. Ill. in colors. 5½ x 7¼ in.





## New, interesting handbook for architects on remarkable mortar cement sent you free

Contains comprehensive and easily available technical data regarding most modern, efficient and economical brick and stone mortar.

Describes manufacturing methods in detail. Explains causes of difficulties that attend old-fashioned mortar practices.

Points the way to better, more economical and more enduring masonry with particular reference to unusual adaptability to architectural requirements.

Experiences of leading contrac-

tors are cited. Exhaustive tests of bricks and mortars are reported. Practical and technical demonstrations are reviewed. Contains simple directions for the utmost in successful and economical masonry.

This booklet with its handy reference tab will fit your data file. As a reference authority for continued use it will be found invaluable.

A request on your letterhead will bring it to your desk—free of charge.

LOUISVILLE CEMENT COMPANY, *Incorporated*, Louisville, Ky.

# BRIXMENT

## REFERENCE LIST OF BUSINESS LITERATURE—Continued

**MORTAR COLORS—See also Paints, Stains, Varnish**

**Ricketson Mineral Paint Works, Milwaukee, Wis.**

376. *Ricketson Mortar Colors*. Two interesting folders with color card of these well known fadeless mortar colors in use for 35 years. 3¼ x 6 in.

**OFFICE SYSTEM**

**The American Rolling Mill Co., Middletown, Ohio.**

- F568. *Principles of Good Correspondence*. A treatise on the principles underlying business getting and business holding letters and their preparation. Illustrated with examples of good and poor letters. 60 pp. 6 x 9 in. Price 50 cents.

- F569. *The Mechanics of Correspondence*. A book covering the practical needs of those who wish to make the business letter a greater business factor. Intended particularly for secretaries, stenographers, and typists. 79 pp. 6 x 9 in. Price 35 cents.

**ORNAMENT METAL WORK—See also Architectural Iron Work—Metals**

**Newman Manufacturing Company, 416 Elm St., Cincinnati, Ohio.**

229. *Newman Ornamental Metal Work—Catalog A*. Booklet showing installations of brass and bronze railings, door hardware, grille work, etc., in banks, theatres and other public buildings. Also shows lighting fixtures and special metal work of all descriptions. 64 pp. Ill. 8 x 11 in.

**PAINTS, STAINS, VARNISHES—See also Waterproofing**

**Breinig Brothers, Inc., Third and Grand Sts., Hoboken, N. J.**

210. *Color Cards*; contains suggestions for color combinations and painting in general; with descriptions for use and illustrations of the following paints; house paint, metal protective paint, shingle stain, enamel tints, floor and deck paint, "Wall-sheen" (flat wall paint), barn and silo paint, screen paint.

211. *Cartons*; contains panels illustrating various effects obtained on woods by the use of Breinig Brothers Wood Finishes.

**Samuel Cabot, Inc., 141 Milk St., Boston, Mass.**

341. *Cabot's Old Virginia White and Tints*. Describes a specially prepared "flat" white which architects say gives "the whitewash white effect." Also describes tints perfectly flat in tone giving the "pastel effect." Used on wood, brick, stone, and stucco. 16 pp. Ill. 4 x 8½ in.

- F597. *Cabot's Old Virginia White*. A thin piece of wood coated with Cabot's Old Virginia White and accompanied by a 4 pp. circular describing this shade, together with specifications for applying it.

**Carter White Lead Co., 12,042 South Peoria St., Chicago, Ill.**

270. *The Carter Paint Calculator*. A valuable book containing answers and solutions to common paint problems; gives sample estimates; data useful to both architect and master painter. Black Fabrikoid cover. Vest pocket size 2½ x 4½ in. 70 pp. Sent postpaid anywhere on request.

**A. C. Horn Company, New York, N. Y.**

300. *Color Card and Brief Description of various Horn Painting Specialties*. Koncrex, Protective Floor coating; Aclac, Service Paint; Symentrin, Flat Wall Finish; Symentrex (Liquid Concrete), a Complete Finish for Concrete or Brick; Horns House Paints (Gov't. Specification).

**The New Jersey Zinc Co., 160 Front St., New York, N. Y.**

227. *Painting Specifications*. A booklet full of useful information concerning paint mixtures for application on various surfaces.

**Ripolin Co., The, Cleveland, Ohio.**

419. *Ripolin Specification Book*, 8 x 10¼ in., 12 pp. Complete architectural specifications and general instructions for the application of Ripolin, the original Holland Enamel Paint. Directions for the proper finishing of wood, metal, plaster, concrete, brick and other surfaces, both interior and exterior, are included in this Specification Book.

**The Sherwin-Williams Co., 601 Canal Road, Cleveland, Ohio.**

278. *Painting and Varnishing Specifications*. A complete specification text book on the painting and finishing of architectural surfaces. 30 pp. 8½ x 11 in.

279. *Portfolio of Flat-Tone Multi-Color Effects*. Containing samples and complete specifications for securing the latest and most beautiful effects in interior wall decoration. 2¼ x 6 in.

**PILES, CONCRETE**

**MacArthur Concrete Pile and Foundation Co., 12 John St., New York, N. Y.**

323. *Concrete Pile Standards*. This treatise gives standard details for pile caps with standard specifications for concrete piles and has a valuable chapter entitled, "How a Pile Supports Its Load." Useful tables are presented with worked examples of computation for typical unusual conditions. 64 pp. Ill. 9 x 12 in.

**Raymond Concrete Pile Co., 140 Cedar St., New York.**

156. *Raymond Concrete Piles—Special Concrete Work*. A booklet with data concerning the scope of the Raymond Concrete Pile Co., for special concrete work. It classifies piles, showing by illustration, text and drawings, the relative value of special shape and manufacture of piles. It gives formulae for working loads, and relative economy. Size 8½ x 11½ in. 60 pp.

**PIPE—See also Metal**

**The Duriron Company, Dayton, Ohio.**

256. *Acid Proof Drain Pipe and Sanitary Fittings. A Message to Owner, Architect and Sanitary Engineer. Bulletin 126*. This bulletin explains the advantages of Duriron Pipe to resist the corrosive action of acids and alkalis. Contains drawings, tables and dimensions and full instructions for installation. 8 pp. Ill. 8 x 10½ in.

**National Metal Molding Co., Pittsburgh, Pa.**

- F595. *The Story of Sherarduct*. This catalog describes the manufacture and use of "Sherarduct," which is an electrical conduit made of a zinc and steel alloy. 36 pp. Ill. 8½ x 11 in.

**National Tube Co., Frick Bldg., Pittsburgh, Pa.**

437. *National Bulletin No. 25*. This bulletin is a valuable treatise on corrosion in pipes; flow of water; flow of steam; strength of pipes of various sizes when used as beams and as columns, etc., numerous tables and diagrams. 86 pp. Profusely illustrated. 8½ x 11 in.

**Rome Brass and Copper Company, Rome, N. Y.**

509. *Bulletin No. 1, Seamless Brass Pipe*. This bulletin illustrates in colors nine installations of hot water heaters between range boiler, basement furnace, tank and instantaneous heaters for one- and two-family houses and larger buildings. Contains also a number of estimating and designing tables, rules and formulas. 22 pp. Ill. 7½ x 11¼ in.

**A. Wyckoff & Son Co., Elmira, N. Y.**

397. *Wyckoff Wood Pipe. Catalog No. 42*. A description of machine-made woodstave pipe and Wyckoff's cypress steam pipe casing. Contains also a number of pages of useful formulas and tables for hydraulic computations. 92 pp. Ill. 6 x 9 in.

**PIPE COVERING**

**The Philip Carey Co., Lockland, Cincinnati, Ohio.**

379. *Pipe and Boiler Coverings. Catalog 1392*. A catalog and manual pipe and boiler coverings, cements, etc. Contains a number of valuable diagrams and tables. 71 pp. Ill. 6 x 9 in.

**PLASTER BASE—See also Stucco Base****PLUMBING EQUIPMENT—See also Drains**

**A. P. W. Paper Co., Albany, N. Y.**

326. *Toilet Cabinets*. A specification card for letter file containing complete descriptions with dimensions, capacity, etc., of Onliwon Cabinets for toilet paper. Illustrated.

**Bridgeport Brass Co., Bridgeport, Conn.**

461. *Plumbing Supplies*. Catalog of adjustable swivel traps; basin and bath supplies and waste; basin and sink plugs; low tank bends; iron pipe sizes of brass pipe. 20 pp. Ill. 8 x 10½ in.

**C. F. Church Manufacturing Company, 430 Williams St., Holyoke, Mass.**

430. *"White Pyralin" Catalog W. S.* A catalog of White Pyralin closet seats. They are made of the best material and covered with Pyralin, a pure white substance which is applied in sheet form and should not be confused with sprayed or enameled products. The surface is non-porous; can be washed with soap and water; does not turn yellow and is guaranteed not to crack or chip. 24 pp. Ill. 6 x 9 in.

**Crane Company, 836 So. Michigan Ave., Chicago, Ill.**

240. *General Plumbing Catalogue*. A very complete and well illustrated booklet describing the complete line of Crane plumbing goods. 80 pp. 8½ x 11 in.

**The Imperial Brass Co., 1200 W. Harris St., Chicago, Ill.**

95. *Catalog C. Loose-leaf catalog*. Illustrated. Describes Watrous equipment; drinking fountains, lavatories, sinks, flushing valves, urinals, seats and all other necessary equipment of the best types of plumbing fixtures. Size 8½ x 10¾ in. 62 pp.

98. *Watrous Gravity Liquid Soap System*. Loose-leaf Catalog. Giving photographs of all details of equipment with description of their use. Size 8½ x 10¾ in. 5 pp.

**Jenkins Bros., 80 White St., New York, N. Y.**

236. *Jenkins Valves for Plumbing Service*. This booklet contains all necessary information about Jenkins Valves commonly used in plumbing work. 16 pp. Ill. 4¼ x 7¼ in. Stiff paper cover.

**Thos. Kelly & Bros. Inc., 404 So. Kolmar Ave., Chicago, Ill.**

511. *1922 Catalog*. A catalog of waterclosets which are suitable for public institutions of all kinds. Also describes the Octopus combination closets. 32 pp. Ill. 6½ x 10 in.

**Kohler Company, Kohler, Wisconsin.**

209. *"Kohler of Kohler."* A booklet on enameled plumbing ware describing processes of manufacture and cataloging staple baths, lavatories, kitchen sinks, slop sinks, laundry trays, closet combinations. 48 pp. Ill. 5½ x 8 in. Roughing-in Measurement Sheets 5 x 8 in.

**Thomas Maddock's Sons, Trenton, N. J.**

259. *General Catalog*. Contains complete description of the full line of fixtures styled the "Highest Grade Standardized Plumbing Fixtures for Every Need." 94 pp. Ill. 5 x 7½ in.

200. *Specifications for Plumbing Fixtures*. Contains tables of specifications for industrial buildings, schools, apartments, hotels, etc. 8 pp. Ill. 9 x 12 in.



# Every radiator is filled with steam—

HAROLD E. PADDON  
ARCHITECT  
HERALD BUILDING  
NEW YORK

September 11th, 1922.

The American Radiator Company,  
104 West 42nd Street,  
New York City

My dear Sirs:

When an architect lays out a heating plan, he has to assume that every radiator will do its full duty.

Your "Airid" Air Valve appeals to me, because its use insures that every radiator will fill completely with steam when heat is turned on, and that there are no air pockets.

Another feature that appeals to me is that it is so made that it cannot be tampered with after it leaves your factory.

Very truly yours,  
*Harold E. Paddon*  
Registered Architect.

HEP:M3

## A jobber says—

"When our customers have no complaints, we feel that our judgment has been right. This is true of the Airid Air-Valves. Not one complaint! No returns! Only repeat orders! And the low price helps volume."

## A Heating Contractor says—

"I used thirty of these Airid Air-Valves on one job and made a new heating system out of it. I can safely say that these valves have already paid for themselves in the fuel they have saved."

## A home owner says—

"Your Airid Air-Valves which replaced the valves installed last Fall are far superior to any I have ever used. Steam now flows to all the radiators without personal attention or adjustment."

MADE AND GUARANTEED BY

# AMERICAN RADIATOR COMPANY

*IDEAL Boilers and AMERICAN Radiators for every heating need*

1807 Elmwood Avenue

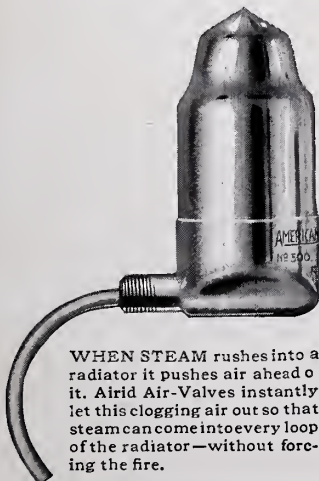
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Buffalo, N. Y.

# AIRID

*Rids the radiator  
of cold air*

# Air Valve



WHEN STEAM rushes into a radiator it pushes air ahead of it. Airid Air-Valves instantly let this clogging air out so that steam can come into every loop of the radiator—without forcing the fire.

## REFERENCE LIST OF BUSINESS LITERATURE—Continued

## PLUMBING EQUIPMENT—See also Drains

- The Vulcan Brass Manufacturing Co.,** Cleveland, Ohio.  
**214. Paragon Ball Bearing Self Closing Faucets, Bibbs and Stops—Catalog B.** Illustrated book showing sectional drawings, illustrations and text describing "Paragon" self-closing work, high pressure ball cocks, parts and valves.  
**Wheeling Sanitary Manufacturing Co.,** Wheeling, W. Va.  
**398. Combination Bath.** A circular describing a new form of bath which combines a seat bath, foot bath, shower bath and child's bath. Occupies much less space than the ordinary bath tub. 12 pp. Ill.  $3\frac{1}{2} \times 6\frac{1}{4}$  in.

## PUMPS

- The Dayton Pump and Manufacturing Company,** Dayton, Ohio.  
**475. Electric House Pumps and Water Supply Systems.** A heavy paper binder containing illustrated bulletins  $8\frac{1}{2} \times 11$  in. These bulletins describe pumps as well as complete automatic electric and gasoline water supply systems and all accessories, together with specifications, detail drawings and tables of dimensions. 48 pp.  
**The Goulds Manufacturing Company,** Seneca Falls, N. Y.  
**387. Power Pump Bulletins.** There are 22 of these bulletins treating on piston, plunger, air pressure, vacuum, triplex and centrifugal pumps. Bulletin 112 and Bulletin 122 containing the theory of pumps together with power pump data are of especial value to engineers in the offices of architects. 16 to 36 pp. Ill.  $8 \times 10$  in.

## REFRIGERATION

- The Automatic Refrigerating Co.,** Hartford, Conn.  
**298. The Mechanics of Automatic Refrigeration and Automatic Refrigeration for Hospitals and Sanatoriums.** Two essential booklets for the library of designers and specification writers. 24 and 28 pp. Ill.  $8\frac{1}{2} \times 11$  in.  
**370. Automatic Refrigeration for Retail Markets.** A valuable treatise on the subject matter mentioned in the title. 30 pp. Ill.  $8\frac{1}{2} \times 11$  in.  
**The Jewett Refrigerator Company,** 27 Chandler Street, Buffalo, N. Y.  
**231. Refrigeration and Health. Vital Facts You Ought to Know.** A booklet outlining the basic requirements of a good refrigerator and explaining how to use a refrigerator to secure best results. 16 pp. Ill.  $4\frac{3}{4} \times 7\frac{3}{4}$  in.

## REFRIGERATORS

- Delco-Light Company, Division of General Motors Corp.,** Dayton, Ohio.  
**511. Frigidaire. Important Facts for Architects and Builders.** Frigidaire is an electric refrigerator for houses and apartments. This book describes the construction, installation and operation of this convenient refrigerator. 16 pp. Ill.  $8 \times 11$  in.  
**McCray Refrigerator Co.,** Kendallville, Ind.  
**472. Refrigerators and Cooling Rooms, Cat. 53.** A catalog of cooling equipment for hotels, restaurants, hospitals, institutions, colleges and clubs. Catalog No. 96 deals with refrigerators for residences. 52 pp. each. Ill. in colors.  $7\frac{1}{2} \times 10$  in.

## ROOFING—See also Slate—Metals—Shingles

- American Brass Company,** Main Office, Waterbury, Conn.  
**515. Copper Roofing. Service Sheet.** This service sheet contains details for laying copper roofing together with standard specifications. 17 x 22 folding to  $8\frac{1}{2} \times 11$  in. printed both sides.  
**American Sheet & Tin Plate Co.,** Frick Building, Pittsburgh, Pa.  
**463. Copper—its Effect Upon Steel for Roofing Tin.** Describes the merits of high grade roofing tin plates and the advantages of the copper-steel alloy. 28 pp. Ill.  $8\frac{1}{2} \times 11$  in.  
**Asbestos Shingle, Slate & Sheathing Co.,** Ambler, Pa.  
**53. Ambler Asbestos Corrugated Roofing.** Catalog gives complete data for specifying, drawings, methods of application, tables, etc. Size  $8\frac{1}{2} \times 11$  in. 20 pp.  
**The Barber Asphalt Paving Company,** Land Title Bldg., Philadelphia, Pa.  
**422. Standard Trinidad Built-Up Roofing Specifications.** Contains two specifications for applying a built-up roof over boards and two for applying over concrete. Gives quantities of materials and useful data. 8 pp.  $8 \times 10\frac{1}{2}$  in. Ask at same time for Good Roof Guide Book. 32 pp. Ill.  $6 \times 9$  in.  
**The Barrett Company,** 40 Rector St., New York, N. Y.  
**403. Roof Flashings Handbook.** A complete descriptive account, illustrated with photographs and architectural blue print drawings, of the new Barrett Standard Roof Flashings. The various types are shown with specifications for their installation. 50 pp. Ill.  $6 \times 9$  in.  
**404. Architectural Service Sheets.** Sheets containing valuable data and information for architects, each dealing with the following products separately: Holy Roof Connection; Barrett Roof Flashings; Barrett Specification Roofs. Full specifications given in each case. Illustrated with photographs and architectural drawings.  $16\frac{1}{2} \times 22\frac{1}{2}$  in.

**The Philip Carey Co.,** Lockland, Cincinnati, Ohio.

- 378. Architects' Specification Book on Built-up Roofing.** A manual for detailers and specification writers. Contains complete details and specifications for each type of Carey Asphalt Built-up Roof. 20 pp. Ill.  $8\frac{1}{2} \times 11$  in.

**The Copper and Brass Research Association,** 25 Broadway, New York, N. Y.

- 468. Copper Roofing.** Weights of various roofing materials. Up-to-date practice in the laying of copper roofs—Batten or wood rib method. Standing seam method, flat copper roofs, Copper shingles, Suggestions for avoiding error and obtaining the full value of copper, Decorative effects and how to obtain them. Flashings, reglets, gutters and leaders. Cornices. Copper-covered walls. Specifications. 32 pp. Ill.  $8\frac{1}{2} \times 11$  in.

**Ludowici-Celadon Co.,** Chicago, Ill.

- 120. Roofing Tile.** A detailed Reference for Architects' Use. Sheets of detailed construction drawings to scale of tile sections of various types and dimensions, giving notes of their uses and positions for various conditions of architectural necessity. Size  $9\frac{1}{2} \times 13\frac{1}{2}$  in. 196 plates.

**The Richardson Company,** Lockland, Cincinnati, Ohio.

- 492. Viskalt Membrane Roofs.** Contains specifications for applying Membrane roof over boards and also for applying over concrete. Illustrated with line drawings of several approved methods of flashings. 3 pp.  $8\frac{1}{2} \times 11$  in.

**Rising and Nelson Slate Company,** 101 Park Ave., New York, N. Y.

- 496. Tudor Stone Roofs.** This leaflet discusses colors and sizes of Tudor hand-wrought slates; deals with the service given to architects and tells how the material is quarried for each product after careful drawings and specifications are prepared in co-operation with architects. Special grades are described in detail and illustrations are given of buildings with Tudor slate roofs. Contains also specifications for laying slate. 4 pp. Ill.  $8\frac{1}{2} \times 11$  in.

**Vendor Slate Co.,** Easton, Pa.

- 333. Occasional brochures** on architecturally pertinent phases of roofing slate sent on request. See also listing under Slate.

## ROOF-LIGHTS—See Glass Constructions

## SANDSTONE—See Stone

## SCREENS

- American Wire Fabrics Company,** 208 So. La Salle St., Chicago, Illinois.  
**305. Catalog of Screen Wire Cloth.** A catalog and price list of screen wire cloth, black enamelled, galvanized, aluminoid, copper bronze. 30 pp. Ill.  $3\frac{1}{2} \times 6\frac{1}{4}$  in.  
**The Higgin Manufacturing Co.,** 5th and Washington Ave., Newport, Ky.  
**353. Screen your Home in the Higgins Way.** A description of Higgin door and window screens with practical data. 16 pp. Ill.  $8\frac{1}{2} \times 11\frac{1}{2}$  in.  
**The New Jersey Wire Cloth Company,** 614 South Broad St., Trenton, N. J.  
**409. A Matter of Health and Comfort. Booklet No. 2331.** A booklet telling all about screens, the durability of copper and its superiority over all other metals for screen purposes. 16 pp. Ill.  $5 \times 7\frac{3}{4}$  in.

## SHEATHING—See also Stucco Base

**Blue Ridge Slate Corporation,** Esmont, Va.

- 514. Flint-Arrow Blue.** A description of a slate surfacing for asphalt shingles. 4 pp. Ill.  $3 \times 6$  in.

## SHINGLES—See also Roofing

**The Philip Carey Co.,** Lockland, Cincinnati, Ohio.

- 381. Carey Asfaltislate Shingles.** Folder containing illustrations of attractive buildings and residences on which Carey Asfaltislate Shingles have been used. Describes this type of shingle, showing its special claims and advantages.

## SIDEWALK LIGHTS—See also Vault Lights

## SKYLIGHTS—See also Glass Constructions—Vault Lights

**H. H. Robertson Company,** 1st National Bank, Bldg., Pittsburgh, Pa.

- 87. Robertson Glazing Construction.** Booklet, illustrated. Types of construction used in industrial, commercial and educational buildings, residences and hospitals, giving description, diagrams, tables of sizes and details of construction. Size  $8 \times 10\frac{1}{2}$  in. 40 pp.

## SLATE—See also Roofing

**Vendor Slate Co., Inc.,** Easton, Pa.

- 332. The Vendor Book of Roofing Slate for Architects.** Contains original information on slate in various architectural uses; history, geology sundry practical matters; complete descriptive classification; extended treatise on architectural roof design and specifications. 24 pp. Ill.  $8\frac{1}{2} \times 11$  in.

## STAINS—See also Paints, Stains Varnishes





City and County Building, Provo, Utah.  
Joseph Nelson, Architect.

*Keystone Copper Steel used for sheet metal work.*

**COPPER**—properly proportioned, puts into sheet steel a new measure of endurance and resistance to rust that cannot be attained without its help. It makes a new metal of steel.

*Superior in Service—Reasonable in Cost*



*Keystone Copper Steel is an alloy made by the addition of a certain percentage of Copper to well made Steel, thereby greatly increasing its lasting and rust-resisting qualities under actual service conditions. It has been scientifically developed and tested—and its use is strictest economy.*

The high reputation of our products is recognized wherever sheet metal is used. Each brand of our manufacture has behind it a service—the scope of which has a tangible value to every architect and builder. This service begins with the planned care and skill in the making, which is carried through to the thorough system of distribution which keeps these products obtainable in every part of the country.

For roofing, siding, gutters, spouting, eaves trough, sheet metal and tin work, use Keystone Copper Steel Galvanized Sheets and Roofing Tin Plates—best for both builder and property owner. Sold by leading metal merchants, and used by leading metal roofers.

# American Sheet and Tin Plate Company

General Offices: Frick Building, Pittsburgh, Pa.

DISTRICT SALES OFFICES

Chicago Cincinnati Denver Detroit New Orleans New York Philadelphia Pittsburgh St. Louis  
Export Representatives UNITED STATES STEEL PRODUCTS COMPANY, New York City  
Pacific Coast Representatives: UNITED STATES STEEL PRODUCTS COMPANY, San Francisco, Los Angeles, Portland, Seattle



## REFERENCE LIST OF BUSINESS LITERATURE—Continued

## STONE

**The Appalachian Marble Company, Knoxville, Tenn.**

503. *Appalachian Tennessee Marble*. A new booklet on the qualities to be demanded in marble and a treatise on Tennessee marble by T. Nelson Dale (Retired Geologist, U.S.G.S.). Contains also illustrations of the plant of the company, buildings in which Appalachian Tennessee Marble has been used and four-color process plates of the six major Appalachian marbles. In tough paper indexed cover. 12 pp. Ill. 8½ x 11 in.

**Indiana Limestone Quarrymen's Assn., P. O. Box 503, Bedford, Ind.**

37. *Indiana Limestone*. Illustrated booklet, Vol. I, of the Limestone Library. Size 6 x 9 in. 36 pp.
147. *Designs for Houses of Indiana Limestone*. A booklet of the best designs submitted in a competition for a detached residence faced with Indiana Limestone. Size 8½ x 11 in. 32 pp.
265. *Folders, Series D*. Structural detail and data sheets showing methods of detailing cut stone work in connection with modern building constructed. 4 pp. each. 8½ x 11 in.
366. *Standard Specifications for Cut Stone Work*. This is Vol. III, Series "A-3," Service publications on Indiana Limestone, containing Specifications and Supplementary Data, relating to best methods of specifying and using this stone for all building purposes. This valuable work is not for general distribution. It can be obtained only from a Field Representative of the Association or through direct request from architect written on his letter head. 56 pp. Ill. 8½ x 11 in.

**National Building Granite Quarries Assn., Inc., 31 State Street, Boston, Mass.**

416. *Architectural Granite No. 1 of the Granite Series*. This booklet contains descriptions of various granites used for building purposes; surface finishes and how obtained; profiles of moldings and how to estimate cost; typical details; complete specifications and 19 plates in colors of granite from various quarries. 16 pp. Ill. 8½ x 11 in.

**The Vermont Marble Company, Proctor, Vt.**

491. *The Book of Vermont Marble*. A reference book for the architectural profession. Accompanied by portfolio of colored plates of marble samples. 67 pp. Ill. 8½ x 11 in.

## STORE FRONTS

**Brasco Mfg. Co., Chicago Ill.**

56. *Brasco System of Hollow Metal Store Front Design*. Folio of Detail Sheets. Full size detail sheets 1, 2, 3 and 4. Corner bar, division bar, reverse bar and three way bar, head transom, sill and jamb sections. Sheets 18 x 22½ in.
57. *Hester System Store Front Construction and Design*. Folio of Details Sheets. Full size detail sheets, a, b, c and d, of hollow metal store front construction, giving full size sections of head, transom, sill and jamb with moulding profiles and bar cover to house awning construction. Sheets 18 x 22½ in.

**Detroit Show Case Co., Detroit, Mich.**

77. *Designs*. A booklet. Store fronts and display window designs, giving plans and elevations, and descriptions. Size 9¼ x 12 in. 16 pp.
78. *Details*. Sheets of full size details of "Desco" awning transom bar covers, sill covers, side, head and jamb covers, ventilated hollow metal sash and profile of members. Size 16 x 21½ in. 3 sheets.

**The Kawneer Company, Niles, Mich.**

467. *A Collection of Successful Store Front Designs*. Illustrations of recently erected modern store fronts with all framing covered with solid copper. Maximum show window surface secured by these designs. Many classes of occupancy shown. 64 pp. Ill. 6¾ x 9¼ in.

**Zonri Drawn Metals Co., Chicago Heights, Ill.**

407. *Architects' Catalog*. In addition to general descriptive matter this catalog contains a true copy of the approval of the Underwriter's Laboratories and a proper glazing specification, based on the Underwriter's report. 88 pp. Ill. 8¾ x 11¾ in.

## STOVES

**George M. Clark & Co., Division of American Stove Co., 179 No. Michigan Ave., Chicago, Ill.**

458. *Gas Stove Catalog, No. 114*. A complete catalog of Clark Jewell gas stoves; water heaters; room heaters; ovens; waffle irons; cake bakers; hot plates; etc. 76 pp. Ill. 6 x 9 in.

**Danlager Stove Co., Division of American Stove Co., Cleveland, Ohio.**

459. *Measured Heat Cookery, Catalog No. 161*. A catalog of gas cooking stoves, ranges and water heaters; featuring the Lorain Oven Heat Regulator, a device for obtaining uniform heat without constant supervision. 72 pp. Ill. 7¼ x 10¾ in.

## STUCCO BASE

**The Bishopric Manufacturing Company, Cincinnati, Ohio.**

451. *Bishopric for All Time and Clime*. A booklet describing Bishopric materials; giving building data, detail drawings and specifications. Illustrated with half tones from photographs of houses built of Bishopric materials. 52 pp. Ill. 8 x 10½ in.

## STUCCO—See also Cement

**The Atlas Portland Cement Co., 25 Broadway, New York, N. Y.**

280. *The Stucco House*. Contains many beautiful illustrations of houses finished with stucco and selected particularly for their architectural value. Detailed illustrations of stucco surface textures and drawings showing wall construction with revised specifications covering application of stucco. 96 pp. 8½ x 11 in. Price 50 cents.

**National Kellastone Company, 155 East Superior St., Chicago, Ill.**

302. *Specifications for Stucco Work*. A booklet containing complete specifications in detail for the use of Kellastone stucco for new buildings as well as the "overcoating" of old buildings. 13 sheets of text, 2 sheets of illustrations. 8 x 11 in.
303. *The Story of Kellastone Impregnable Stucco*. In this most interesting book the merits of Kellastone are set forth in a convincing manner. Every page contains pictures of beautiful houses stuccoed with Kellastone and there are two pages in color. 22 pp. Ill. 8½ x 12 in.

## TELEPHONES

**Federal Telephone & Telegraph Co., Buffalo, N. Y.**

344. *Federal Apartment House Telephones*. A short illustrated description of four classes of telephone equipment for apartment houses; Vestibules, the Suits, Rear Entrance, and the Janitor's Headquarters. 6 pp. Ill. in colors. 4 x 8 in.

345. *Interior Telephone Systems. Bulletin No. 610*. A detailed description of Selective Talking and Ringing Systems and Multiple Talking Systems of telephones for all kinds of establishments, from the most simple to those working on exchange trunks and central stations. 22 pp. Ill. 8¼ x 10 in.

**Stromberg-Carlson Telephone Mfg. Co., Rochester, New York.**

304. *Inter-Communicating Telephone Systems. Bulletin No. 1017*. A pamphlet giving just the information required for the installation of intercommunicating systems from 2 to 32 stations capacity. 15 pp. Ill. 7¾ x 10 in.

## TERRA COTTA

**Atlantic Terra Cotta Company, 350 Madison Avenue, New York, N. Y.**

425. *Questions Answered*. A brief but full description of Atlantic Terra Cotta and its use in buildings. 32 pp. Ill. 5¼ x 7 in.

426. *Booklets on Buildings*. A series of booklets describing terra cotta work for buildings of different kinds. In applying, mention size, type and purpose of building for which data is wanted.

- F590. *No. 5, Vol. V of Atlantic Terra Cotta*, contains a description with illustrations of the 13th century terra cotta work on the Palazzo Comunale and the 15th century terra cotta work on the Palazzo Stanga. 12 pp. Ill. 8½ x 11 in.

**National Terra Cotta Society, 19 W. 44th St., New York, N. Y.**

157. *Terra Cotta Defined. Brochure Series, Vol. VI*. Illustrated brochure with photographic illustrations of architectural terra cotta, details of terra cotta ornament in office-buildings, theatre, bank, school, store, and public buildings. Its adaptability and lasting qualities are given and the process of manufacture and history is briefly outlined. Size 8½ x 11 in. 32 pp.

445. *Present Day Schools. Brochure Series, Vol. I*. The use of terra cotta for schools is exemplified in the presentation of 42 schools in the East, the Middle West and Far West, together with a discussion of "Some General Points on School Buildings" by James O. Betelle, A. I. A. 32 pp. Ill. 8½ x 11 in.

446. *Better Banks. Brochure Series, Vol. IV*. Illustrations are given of handsome appearing banks in many states, showing the application of terra cotta, with an article on "Terra Cotta for Banks" by Alfred C. Bosson, architect. 32 pp. Ill. 8½ x 11 in.

**The Northwestern Terra Cotta Co., 2525 Clybourn Ave., Chicago, Ill.**

96. *Architectural Terra Cotta*. A collected set of advertisements in a book, giving examples of architectural terra cotta, ornamental designs and illustrations of examples of facades, of moving-picture houses, office buildings, shops, vestibules and corridors in which Northwestern Terra Cotta was used. Size 8½ x 11 in. 78 pp.

## TILE—Ornamental

**The Associated Tile Manufacturers, Beaver Falls, Pa.**

259. *Basic Information on Tiles*. Book giving practical information on ingredients, processes, gradings, sizes, shapes, colors, finishes and nomenclature. Sent to architects on request. 7¼ x 10½ in.

358. *Home Suggestions*. A new book in colors describing and illustrating the use of tiles in floors, walls, ceilings, fireplaces, garages, for exterior embellishment, etc. Full of suggestions. Sent to architects on request. 7¼ x 10½ in.



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## REFERENCE LIST OF BUSINESS LITERATURE—Continued

## TILE—Ornamental

The Associated Manufacturers, Beaver Falls, Pa.

374. *Basic Specifications for Tilework and Related Documents. No. K-300.* This specification is prepared in a very systematic manner for the use of architects and builders. It is printed on one side of a sheet with facing page blank to receive memoranda. Various colored sheets make reference easy and simplify greatly the work of a specification writer in specifying tilework. 38 pp. 7½ x 10½ in.

375. *"Work Sheets" for Specification Writers.* To be used in connection with "Basic Specification for Tilework and Related Documents." 16 sheets 7½ x 10½ in.

## TIME CLOCKS—See Clocks

## TREADS, SAFETY

American Abrasive Metals Co., 50 Church St., New York, N. Y.

383. *A New Safety Tread.* A folder announcing the perfecting of a process whereby aluminum is used as the abrasive-holding base, or matrix, in a new safety tread for locations where this detail may be ornamental. Ill. 8½ x 11 in.

## TRIM—See also Doors and Windows

## TRUSSES—See Building Construction

## VACUUM CLEANERS

Landers, Frary & Clark, Connersville, Ind.

209. *General Catalogue.* This book describes and illustrates Connersville vacuum cleaners, stationary and portable, dry and centrifugal separating units, sizes of machines, uses and typical installations. 24 pp. 5¼ x 9 in.

## VARNISH—See Paints

## VAULT LIGHTS

American Three Way Luxfer Prism Co., 13th Street and 55th Court, Chicago, Ill.

424. *Daylighting. Catalog 21.* A complete catalog on glass prisms for use in transoms, sidewalk and floor lights, skylights, etc., for lighting places inaccessible to direct daylight. Contains also measurements, specifications and other data required by designers. 42 pp. Ill. 8½ x 11 in.

## VENTILATORS

American Blower Co., Detroit, Mich.

F576. *Clean Fresh Air for Your Kitchen.* A pamphlet describing a "Sirocco" Ventura fan to be installed in a window for house ventilation. Quotes price. 8 pp. Ill. 3¼ x 6¼ in.

The Burt Manufacturing Co., Akron, Ohio.

207. *General Catalogue* covering entire line of Ventilators, Exhaust Heads and Filters. Separate leaflets on each type of ventilator, vent and damper.

Globe Ventilator Company, 205 River St., Troy, N. Y.

250. *"Globe" Ventilators.* A catalog giving dimensions, gauges of material, capacities and list prices of "Globe" ventilators, also illustrating many different classes of buildings on which "Globe" ventilators are installed. 32 pp. Ill. 6 x 9 in.

King Ventilating Company, Owatonna, Minn.

F578. *How to Make Good Buildings Better.* A practical discussion on the planning, construction and ventilation of barns. 16 pp. 5 x 7½ in.

## VENTILATION—See Heating and Ventilation

## WALL COVERING

Standard Textile Products Co., 320 Broadway, New York, N. Y.

111. *Sanitas, Modern Wall Covering. Folio.* Plates of color renderings of various interiors, with suggestions for the library, living room, dining room, boudoir, kitchen and church wall covering, using Sanitas. Size 11½ x 6 in. 15 plates.

112. *Sanitas and Its Uses.* Booklet. Text and color illustrations of Sanitas as a wall covering, with tables for wall and ceiling measurements. Notes on sanitary character, cleanliness and durability of Sanitas. Size 5 x 7 in. 28 pp. 6 color plates and 2 sample sheets.

113. *Sanalining Sanitas Lining and Prepared Lining.* Folder. Notes on durability and cleanly character of the above three products. Size 3¼ x 6 in.

114. *Hints to Decorators.* Booklet. Instructions and specifications for the application of Sanitas, with notes on finishes and material. Size 5 x 6¼ in. 20 pp.

## WATER HEATERS

Humphrey Co., Kalamazoo, Mich.

50. *Humphrey Gas Water Heaters.* Catalog and handbook. Diagrams, tables and complete data for specifying gas water heaters of all types and sizes. Size 6 x 9 in. 36 pp.

## WATERPROOFING—See also Dampproofing

A. C. Horn Company, Horn Building, Long Island City, N. Y.

301. *Architect's Set.* A file folder, ready labelled for inclusion in the files, containing a full set of literature on all Horn Waterproofing, Dampproofing and Technical Paints. Descriptive Chart giving covering capacities, etc., printed on inside of folder.

The Truseon Laboratories, 1632 Caniff St., Detroit, Mich.

238. *Architects' Specification Hand Book.* This book contains 32 sheets bound in tough paper loose-leaf binder. The specifications cover the waterproofing of concrete, plaster and stucco; the dampproofing of surfaces of cement, concrete, brick and stone; the oil proofing of concrete; the use of paint and enamel on all surfaces; the application of metallic and chemical floor hardeners; the use of protective steel coatings and architectural varnishes. 8½ x 11 in.

239. *Dampproofing.* Booklet giving specifications on black dampproofings, including Plaster Bond (dampproofing for interiors). Foundation Coat (dampproofing under each filling) and Stone Backing (dampproofing unexposed sides of cut stone). 12 pp. Ill. 5¼ x 7¼ in.

Wadsworth Howland & Co., Inc., Boston, Mass.

306. *Bay State Waterproofing.* Contains descriptions of and specifications for use of brick and cement coating, crack filler, below grade waterproofing, steel protective coating, cement floor filler and coating, clear waterproofing. 16 pp. Ill. 8 x 10½ in.

## WATER PURIFICATION

Everson Filter Company, 70 West Lake St., Chicago, Ill.

F593. *Everson Water Purification for Swimming Pools.* Bulletin dealing with swimming pool water purification and describing Everson equipment and application with detail drawing of layout. Size 9 x 12 in. 10 pp.

United States Ozone Co., Scottsdale, Pa.

245. *Bulletin 37. Ozone Water Sterilizers.* Contains description of principles and mechanical design, results obtained and specifications covering construction. Complete outline of operation. Capacities from 100 to 1,000 gallons per hour.

246. *Bulletin 39. Swimming Pools.* Description and application of Ozone apparatus to Swimming Pools. This Bulletin completely covers the purification of swimming pool water and gives unique designs of swimming pool circulating systems.

## WATER SOFTENERS

The Permutit Company, 440 Fourth Ave., New York.

105. *Permutit (Water Rectification Systems.)* Illustrated booklet. Describes all methods of softening water, including the original Zeolite process. For homes, hotels, apartment houses, swimming pools, laundries and industrial plants. Size 8½ x 11 in. 32 pp.

## WATER STILLS

Barnstead Still and Sterilizer Co., Inc., Boston 30, Mass.

508. *Barnstead Water Stills.* A complete handbook on distilled water and water distilling apparatus. 32 pp. Ill. 5½ x 8 in.

## WATER SUPPLY—See Pumps

## WEATHER STRIPS

The Higgin Manufacturing Co., 5th and Washington Ave., Newport Ky.

354. *Higgin All Metal Weather Strips.* A booklet of considerable value to architects and builders on the use of weather strips. Ask also for the companion book on "The Reason Why." Each booklet 12 pp. Ill. 6 x 9 in.

Monarch Metal Products Co., 5020 Penrose Street, St. Louis, Mo.

512. *Monarch Metal Weather Strips.* This publication embodies all the suggestions for advertising literature made by the Committee on Structural Service of the American Institute of Architects. It contains a treatise on leakage around windows, together with description of Monarch Metal Weather Strips. Contains many detail working drawings. 48 pp. Ill. 7½ x 10½ in.

## WINDOWS—See Doors and Windows

Standard Comfort Window Corporation, 426 Broome St., New York, N. Y.

405. A book describing a combination sliding and swinging sash which may be applied to new and old double hung windows, draft-free ventilation; maximum comfort; weather tight; takes all danger out of window washing. 12 pp. Ill. 6 x 9 in.

## WOODWORK

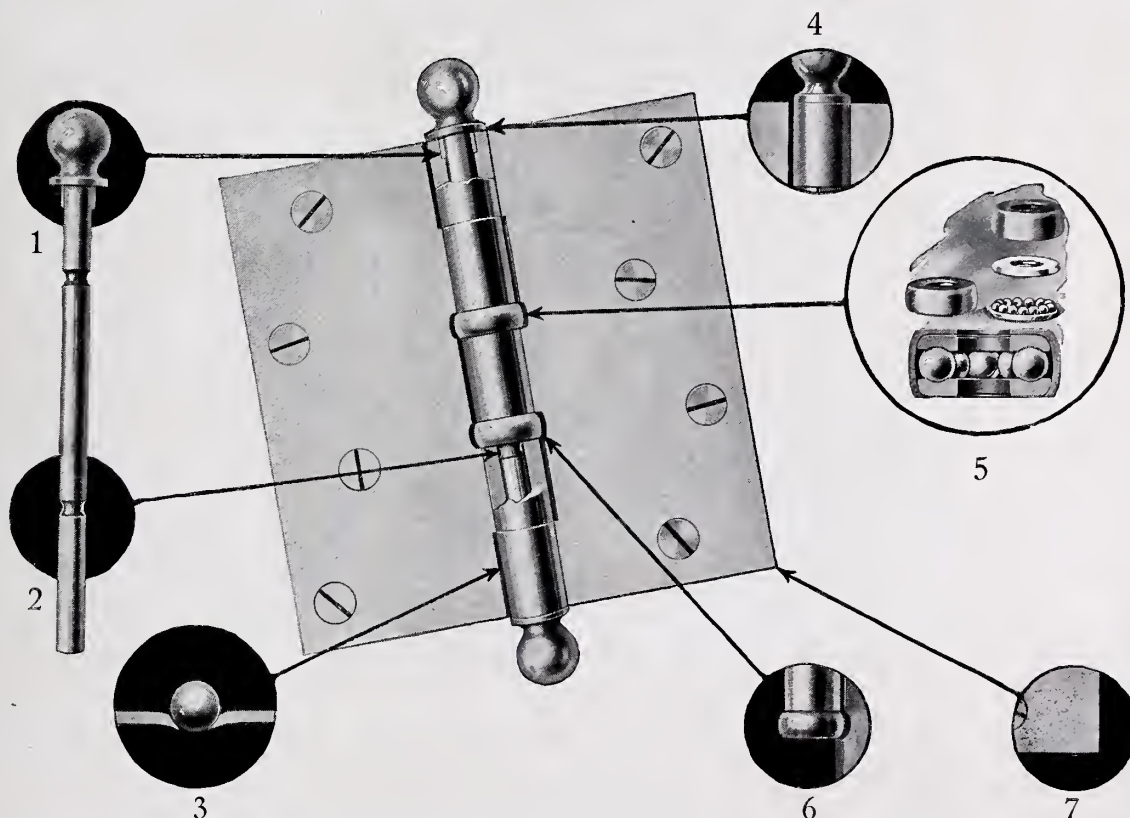
Hartmann-Sanders Company, 6 East 39th St., New York, N. Y.

334. *Catalog No. 47.* Illustrating Koll's Patent Lock Joint wood stave columns for exterior and interior use. 48 pp. Ill. 7½ x 10 in.



# STANLEY

## BALL BEARING BUTTS



### SEVEN DISTINCTIVE FEATURES

1. Non-rising Loose Pins
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Write for "Detail Manual" AA-19.



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*Manufacturers of Wrought Hardware and Carpenters' Tools*



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Entrance to residence of  
Col. E. H. R. Green,  
New Bedford, Mass.

Erected entirely of gran-  
ite from plans by A. C.  
Possom, Architect.

## Granite And A Seaside House

On a promontory that points out to sea like a huge finger, toward the Nantucket Lighthouse, stands the new residence of Col. E. H. R. Green, at New Bedford, Mass.

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H. H. Sherman, *Secretary*

31 State Street, Boston, Mass.

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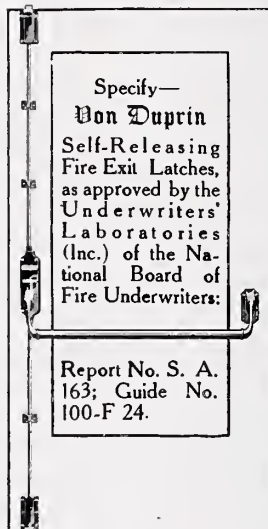
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Is it?

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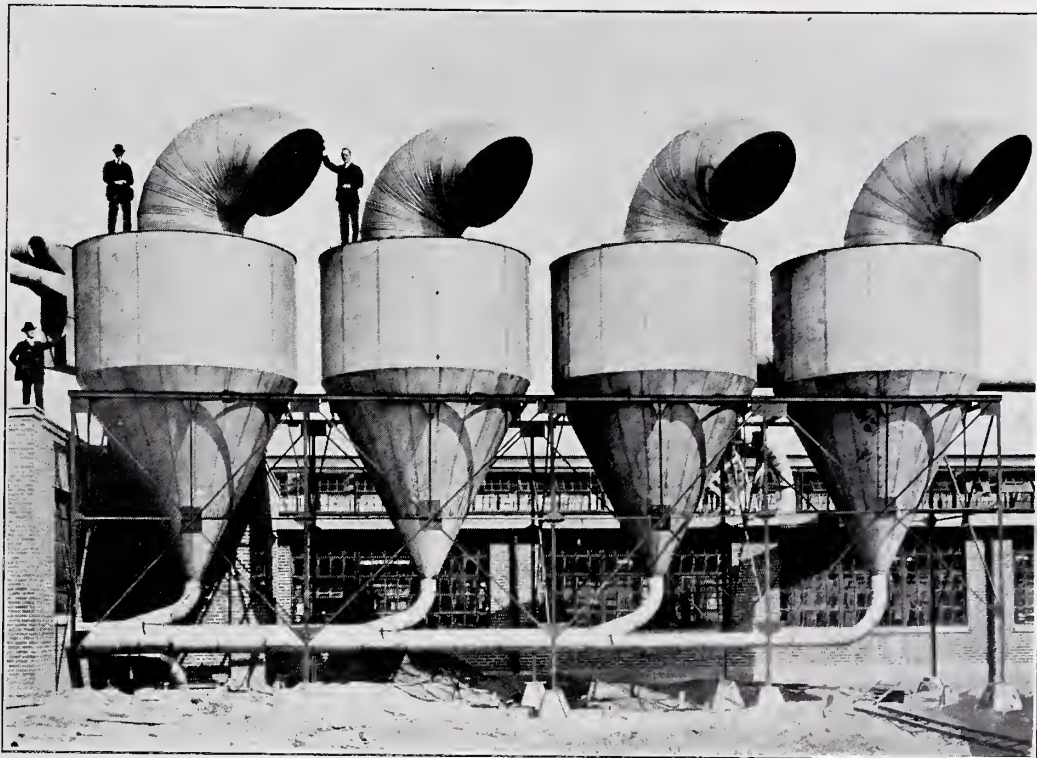
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"In comparison between 'Armco' and steel, the working qualities of 'Armco' are far superior to that of any steel I have ever worked, and 'Armco' Ingot Iron will last many times longer in jobs that require a rust-resisting material than any material I have ever used."

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THE AMERICAN ROLLING MILL COMPANY, Middletown, Ohio



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These 10 features are embodied in roofing equipment made from Horse Head Zinc:

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Photograph shows  
separate shades,  
drawing up from  
the bottom.



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It affords free air passage without direct draft.

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It stays where put without adjusters. Its easy, balanced movement and friction control are a pleasure to use.

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Steel Windows  
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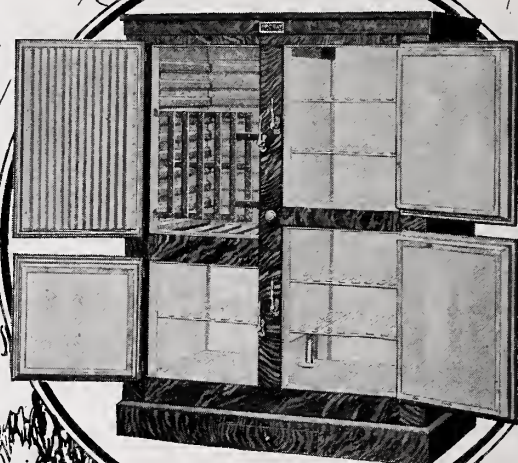
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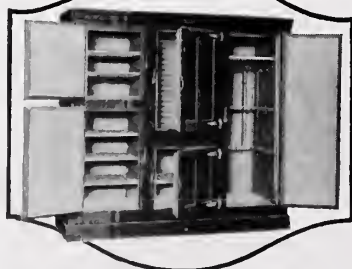
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*"For Large Residences"*

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# Knowing where to find things

SOMEONE has said that knowledge is not so much knowing things as knowing where to find them.

Isn't that largely true of architecture?

Modern building has become so complex that no architect can be expected to know off-hand the merits or defects of all the materials and devices offered for his consideration. That is emphatically true of the pipe organ, because the occasions for specifying it are few and far between.

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and let us place before you, when you need them, the facts about the Estey, and the complete and practical help we are able to give in adapting this organ to any building or space required.

ESTEY ORGAN COMPANY, *Battleboro, Vermont*

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The climax in the huge impersonal drama of cement making is the burning of the raw materials in great rotary kilns.

One of the largest kilns, set on end, would be as tall as a 20-story building. A touring car could run through it.

The kilns are steel cylinders lined with fire brick. They rest at a slight angle from the horizontal on heavy rollers, and are driven by steel gears at half a revolution a minute. A medium-sized kiln weighs 275,000 pounds, empty, and has foundations as heavy as for a 10-story building.

Into the upper end of the revolving kilns flow the finely ground materials for cement. There they meet a blast of burning pulverized coal, blown in at high pressure from an 8-inch jet at the opposite end.

Where the materials enter the kiln, the temperature is 1,000 degrees Fahrenheit or more. As they tumble over and over on their 3-hour journey through the kiln in the face of the flame, they rise gradually to a temperature of 2,500 to 3,000 degrees—more heat than is required for almost any other industrial process.

The workman, watching through his peephole in the end of the kiln, must wear smoked glasses. It is like looking at the sun. And if you speak to him, you must shout close to his ear to be heard above the roar of the flames.

In a big cement plant, there will be a dozen or more of these kilns, roaring and revolving side by side in one great room.

A medium-sized kiln's output is 25 barrels an hour, and in that time 3,500 pounds of coal must be blown into it.

You may have seen the great smoke stacks in rows over a cement plant. There is a stack for every kiln, and four kilns make a medium-sized plant, with 3,000 barrels capacity a day or thereabouts. When you see four of these stacks together, you can know that enough coal or equivalent fuel is being burned in the kilns beneath to supply the electricity for the homes, streets, shops and industries of three ordinary cities of 20,000 inhabitants each.

In a certain town of 12,000 inhabitants there is a 4-kiln plant where the heat lost through the stacks, because of the great temperature and draft required below, would, if it could be captured, supply three times the electric light and power used by all the rest of the town. Burning cement, costly as it is, is only one of the heavy fuel consuming operations in cement making.

Every ton of cement you buy takes the equivalent of more than half a ton of coal in heat and power to make it—more than 200 pounds, that is, to the barrel of 376 pounds.

## PORTLAND CEMENT ASSOCIATION

*A National Organization*

*to Improve and Extend the Uses of Concrete*

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Boston	Detroit	Milwaukee	Philadelphia	Seattle
Chicago	Helena	Minneapolis	Pittsburgh	St. Louis
Dallas	Indianapolis	Portland, Oreg.	Vancouver, B. C.	
Denver	Kansas City	New York	Salt Lake City	Washington, D. C.



# What Every Architect Wants to Know

No. 10—Number of layers contained in any built-up roof—information absolutely essential for the intelligent award of a built-up roofing contract.



## GENASCO LINE

Trinidad Lake Asphalt  
(For streets and roofs)  
Standard Trinidad  
Built-up Roofing  
Bermudez Road Asphalt  
(For road building)  
Genasco Roll Roofing  
Genasco Sealbac Shingles  
Genasco Latite Shingles  
Genasco Vuleanite  
Mastic Flooring  
Genasco Acid-proof Paint  
Genasco Industrial Paint  
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Genasco Asphalt Putty  
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Genasco Wall Lining  
Iroquois Road-building  
Machinery



Wolf & Dessauer Building, Fort Wayne Ind., roofed with Genasco Standard Trinidad. Charles R. Weatherhogg—architect John H. Welch & Sons Roofing Contractor.

GENASCO STANDARD TRINIDAD Built-up Roofing is built in 6 layers—3 layers of solid Trinidad Lake Asphalt and 3 layers of super-saturated asphalt felt.

Mineral surfaced built-up roofs contain 12 layers—5 layers of residuum pitch or oil asphalt, 5 layers of paper-stock felt, 1 large auxiliary dry sheet and 1 layer of gravel or slag.

Now compare their difference in weight, waterproofing efficiency and cost of application.

Genasco Standard Trinidad weighs only 150 pounds per square—has a waterproofing efficiency of **85% per square**—and is put on with 6 labor operations.

Mineral surfaced roofs weigh 625 pounds per square—have a waterproofing efficiency of only 30% per square—and require 12 labor operations (or twice as many as for Genasco Standard Trinidad) to apply them.

That is why STANDARD TRINIDAD is the most efficient as well as the most economical built-up roofing an architect can specify. Write at once for complete specifications for laying Genasco Standard Trinidad.

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Dr. John Nevin, Medical Director of the Jersey City Hospital, made this statement, having in mind, of course the prime requisites of a good hospital floor—quiet, sanitary, non-slippery, warm, handsome and durable.

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The handbook, "Armstrong's Linoleum Floors," contains lithographs of these new jaspe linoleums, as well as model specifications and directions for installing permanent linoleum floors in hospitals and other public and semi-public buildings. Ask for a copy and samples of the material itself, on your letter-head.

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J. W. Greene, Linoleum Contractor  
6500 square yards of Armstrong's  
Gray Jaspe Linoleum laid

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"All floors throughout each story, as designated on the plans, shall be covered with Armstrong's  $\frac{1}{8}$ th-inch Jaspe Linoleum, installed in the manner described in the following paragraphs."—John T. Rowland, Jr.

For complete specifications see Sweet's Architectural Catalog, Sixteenth Edition, pages 441-445, or American Architect Specification Manual, 1921, pages 210-212.





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Quartered Oak would have cost	822
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And the beauty of the interior woodwork has been the chief cause for comment by thousands of visitors.

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of an office building includes corridor locks that safeguard the property of the tenant when the office is closed, and which, with the communicating door locks, and the locks for private offices, provide the necessary convenience of operation during the hours when business is going on, all being grouped in a master-key system that simplifies the care of the building and fully protects the management.

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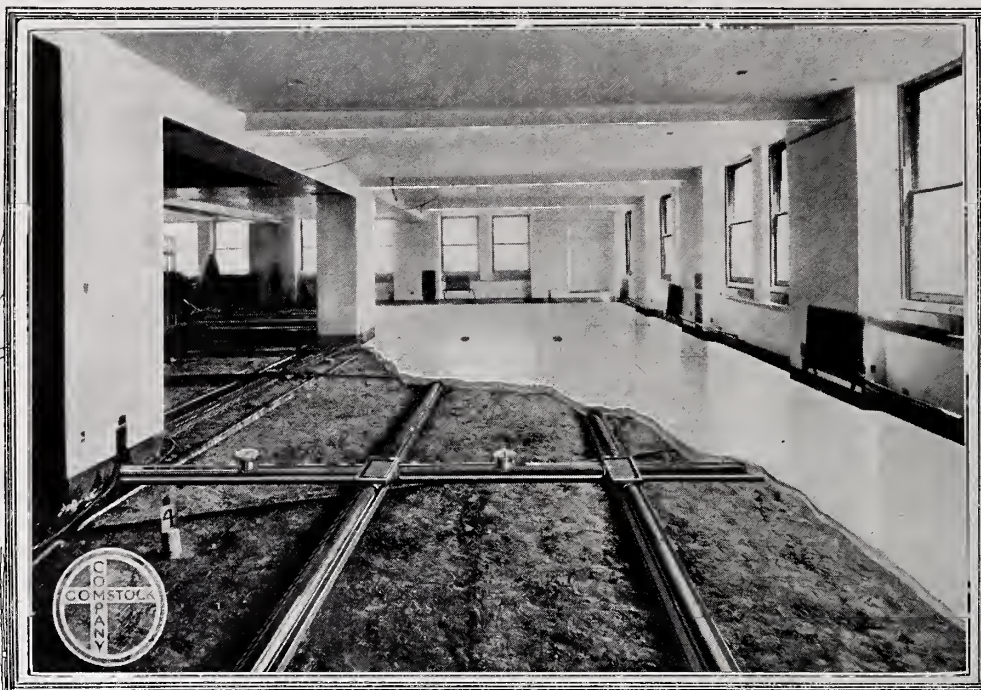
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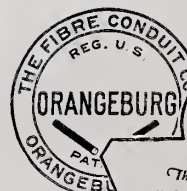
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*Magnolia Petroleum Company Building*

Alfred C. Bossom, Architect  
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*American Exchange National Bank Building*  
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*Magnolia Petroleum Company Building*

# INDIANA LIMESTONE

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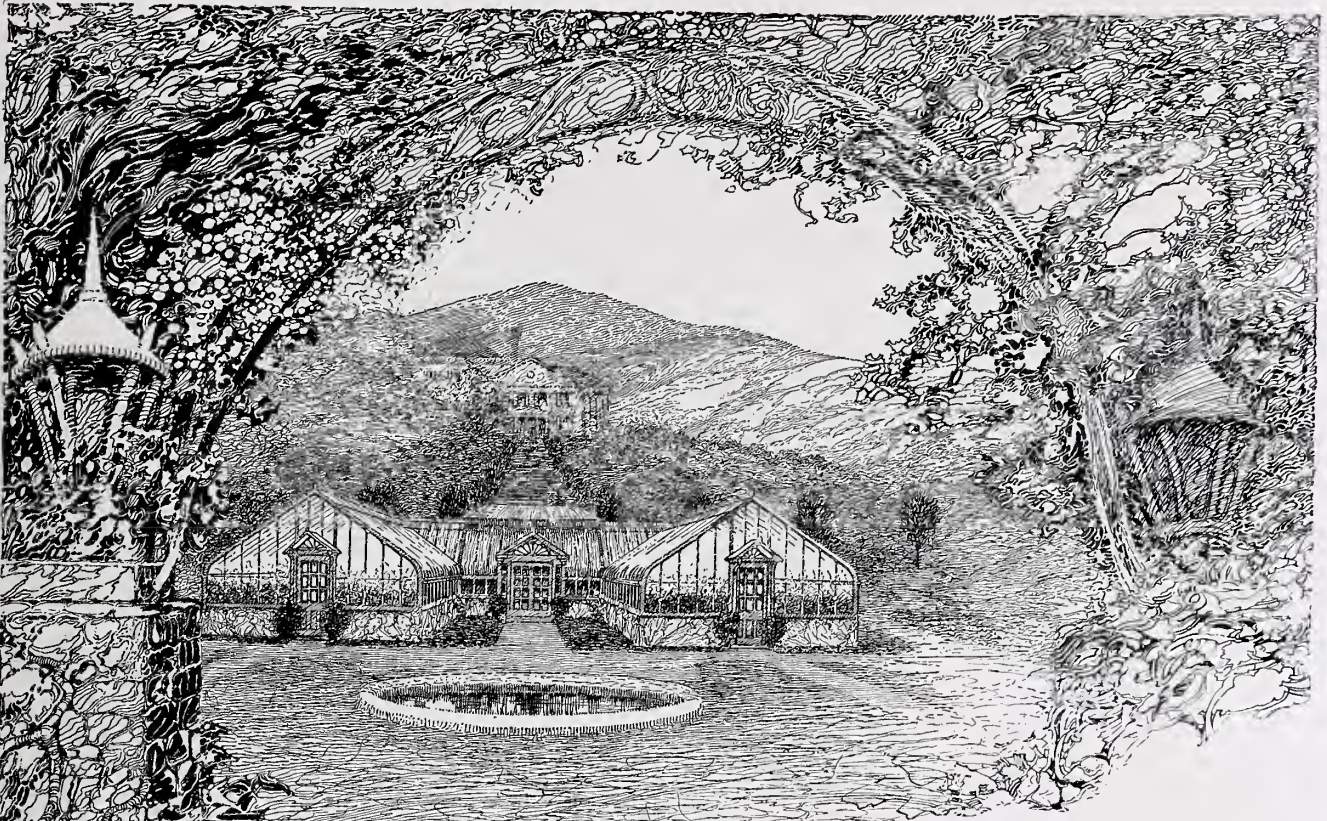
kind of mortar joint, all contribute to extend the artistic possibilities of the Face Brick wall.

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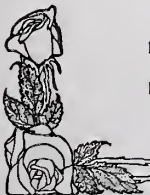
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**Y**OU can do the contractor a favor by specifying Carney. If he doesn't use Carney it is simply because he does not know its advantages. That's why you are doing him a favor by specifying it. Ask the contractor who uses Carney. Here is his story:

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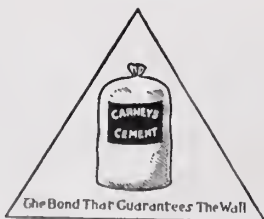
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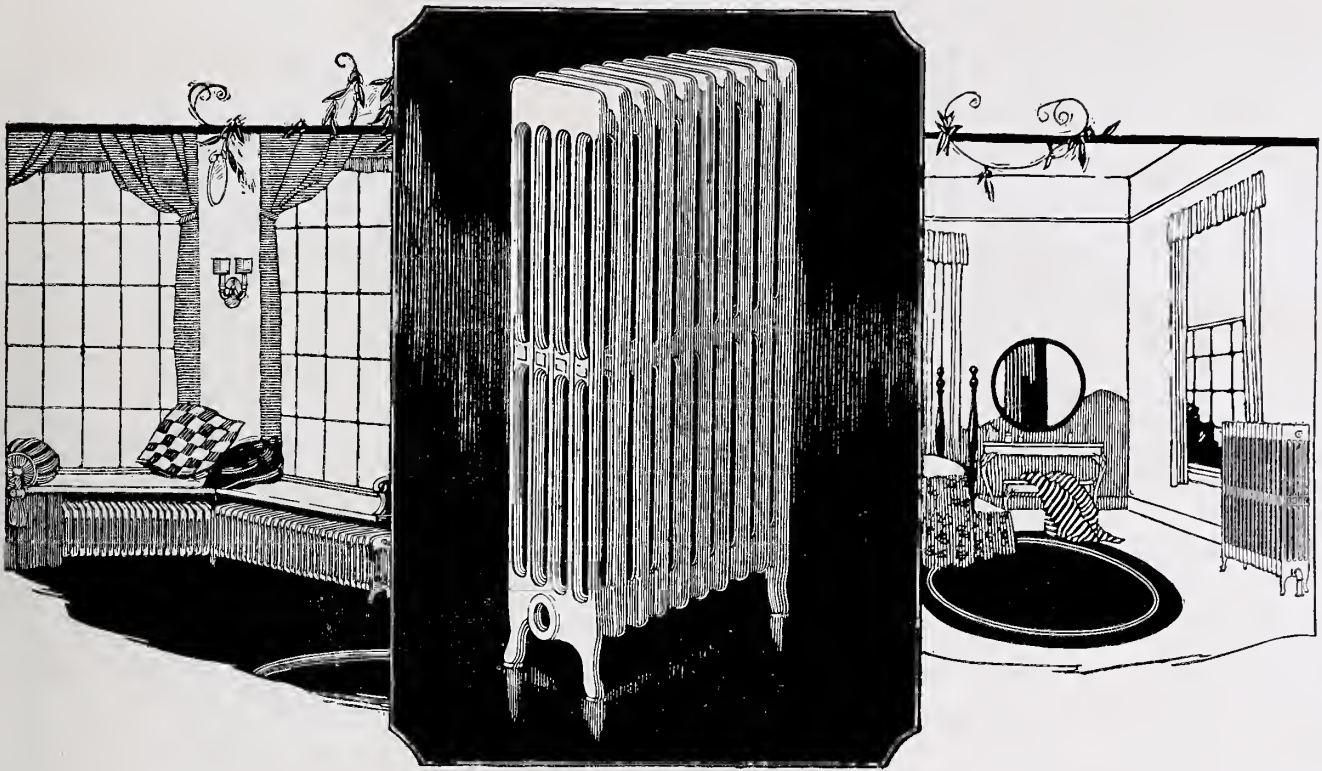
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**THE ASSOCIATED  
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at Germantown, Pa.*

**I**N rambles through the older communities it is interesting to note the excellent condition of Copper after a century or more of service.

This Revolutionary dwelling at Germantown, Pa., for instance, has Copper downspouts which present residents say have been in use since the

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*Galvanized iron leader-head  
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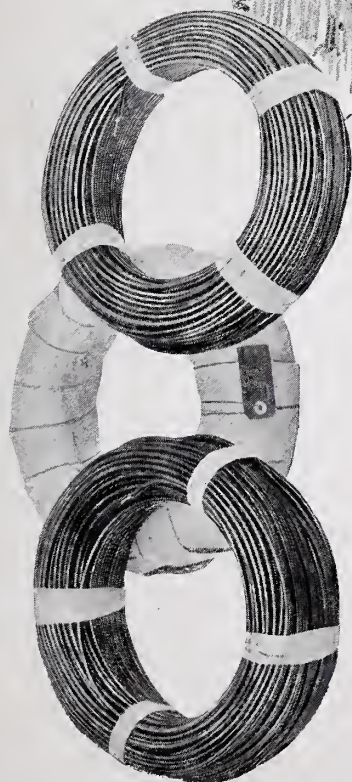
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*The same care should be given to the selection of electrical material for a building as is used in selecting other elements of the structure*



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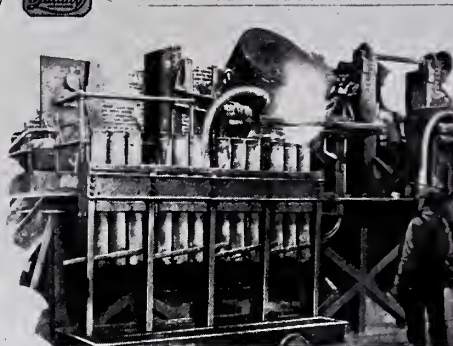
After the metal has been melted and up and weighed under their supervision, formed into a billet it is further tested by

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You'll find this Brass Pipe Book a useful guide and reference

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Pouring from one of a battery of electric furnaces

this department before being passed to the next operation.

Rome Seamless Brass Pipe is formed in one piece, and is made by either the piercing or the cast shell process, depending on the size and the service requirements of the pipe.

Electric furnaces of the type shown above are used. They are of late development and provide a scientific and mechanical method for melting and regulating ingredient metals—one that practically eliminates the human element and consequent guess work.

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The free mechanical control which each furnace affords makes the operator a master caster, and he can pour a casting with what

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draw the pipes are uniformly as heat treatment is a vital production of dependable, we have, through extensive n, perfected this important ter the required number of ations, and after the tube has its specified size, it is passed sheeting machine which not the tube, but relieves it of strain which it might have in the various drawing oper-

process is employed in the large size tubes of copper or that must be worked cold, de in the shape of a hollow and is drawn cold through pure hydraulic rams, until eter and correspondingly

final lengths and diam- sh dies and receives an- the forming machine

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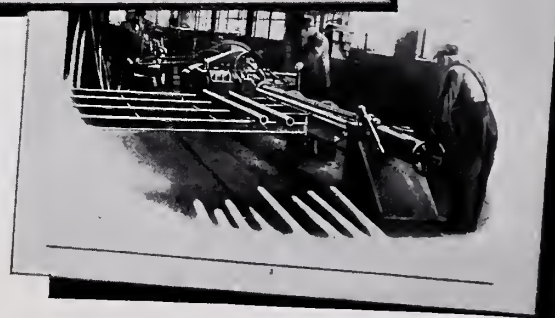
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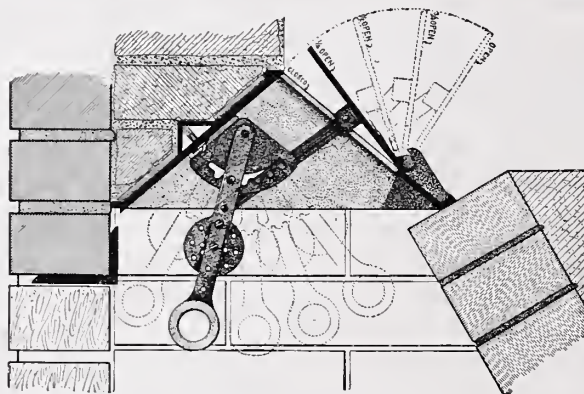
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Cross Section of Style E.

The Colonial Head is the only Damper made that takes up expansion and contraction of alternate heat and cold within itself. Built in sections, securely bolted together and reinforced with a steel angle bar. Rigid, yet designed to allow for the movement of expansion without disturbing the outer work. No cracking of the fireplace front is possible. No smoking.

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Style A—Damper control key comes through the face of the fireplace, on the left-hand side when facing the fireplace.

Style B—Key comes out below the arched bar of the fireplace. Iron wrench for turning key when hot supplied.

Style C—Key comes through at right-hand end or return. Can be had on left-hand end if desired.

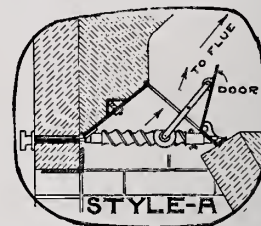
Blueprints supplied on request. See Sweet's Catalogue and The American Architect Specification Manual for details.

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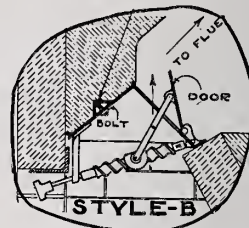
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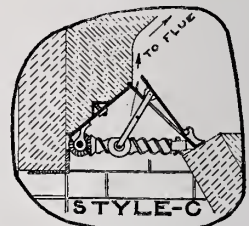
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STYLE-A



STYLE-B



STYLE-C

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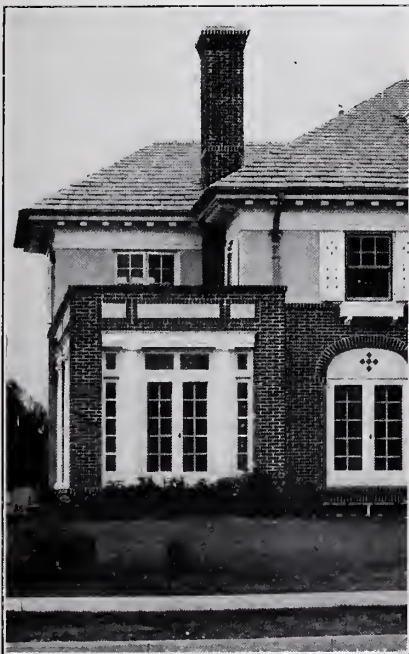
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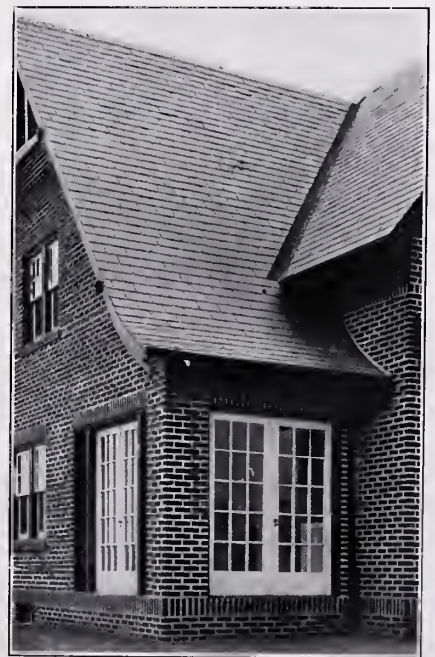
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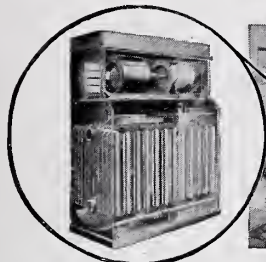


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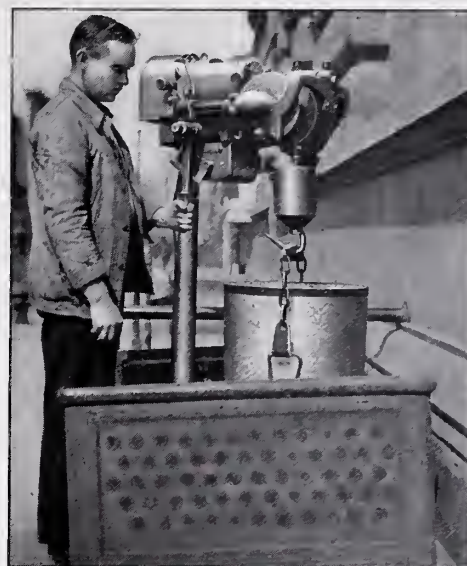
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1	4.3	3.8	4.0	12
2	4.2	3.8	4.0	12
3	4.2	3.7	4.2	12
4	4.3	3.8	4.2	13
5	4.4	4.0	4.3	12
6	4.3	3.75	4.25	13
7	4.45	4.0	4.3	12
8	4.5	3.9	4.3	13
9	4.5	4.0	4.2	12
10	4.5	3.8	4.3	12
11	4.3	4.1	4.4	13
12	4.2	4.0	4.35	12

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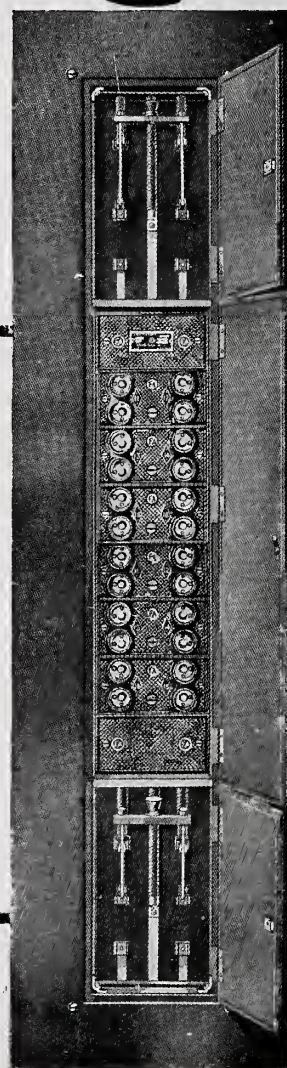
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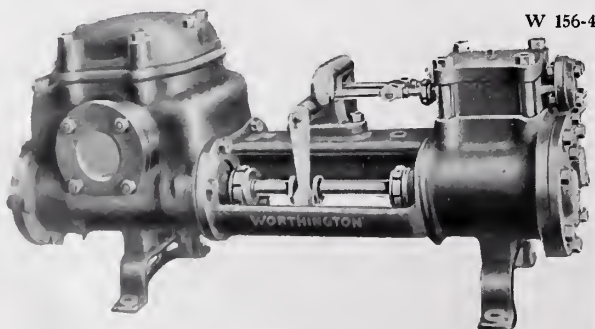
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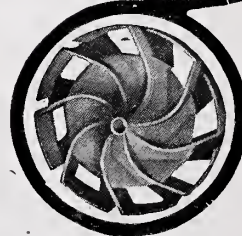
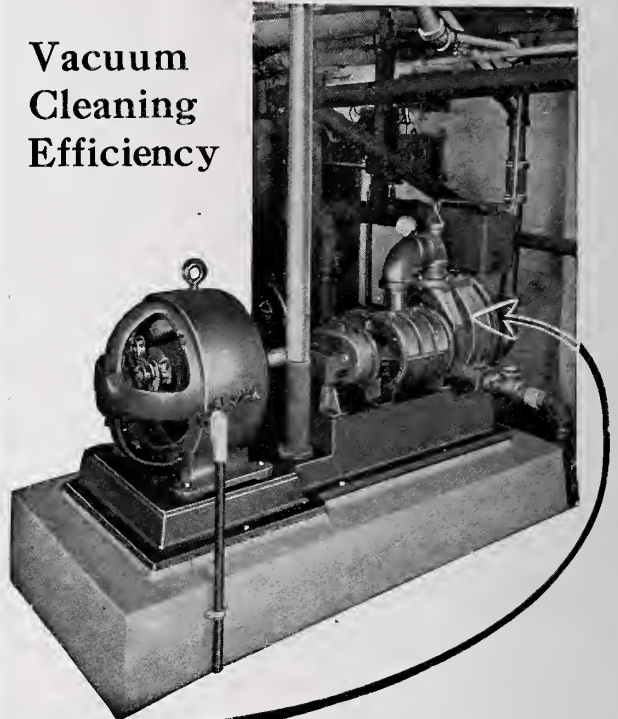
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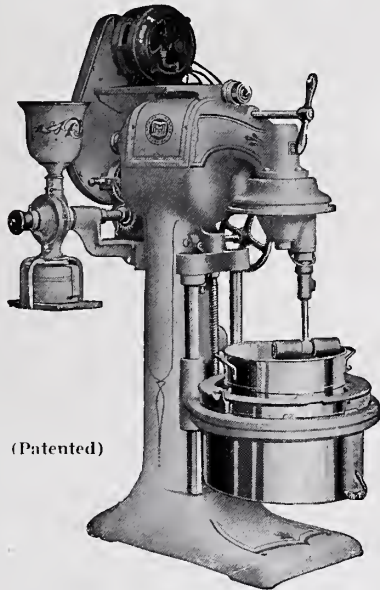
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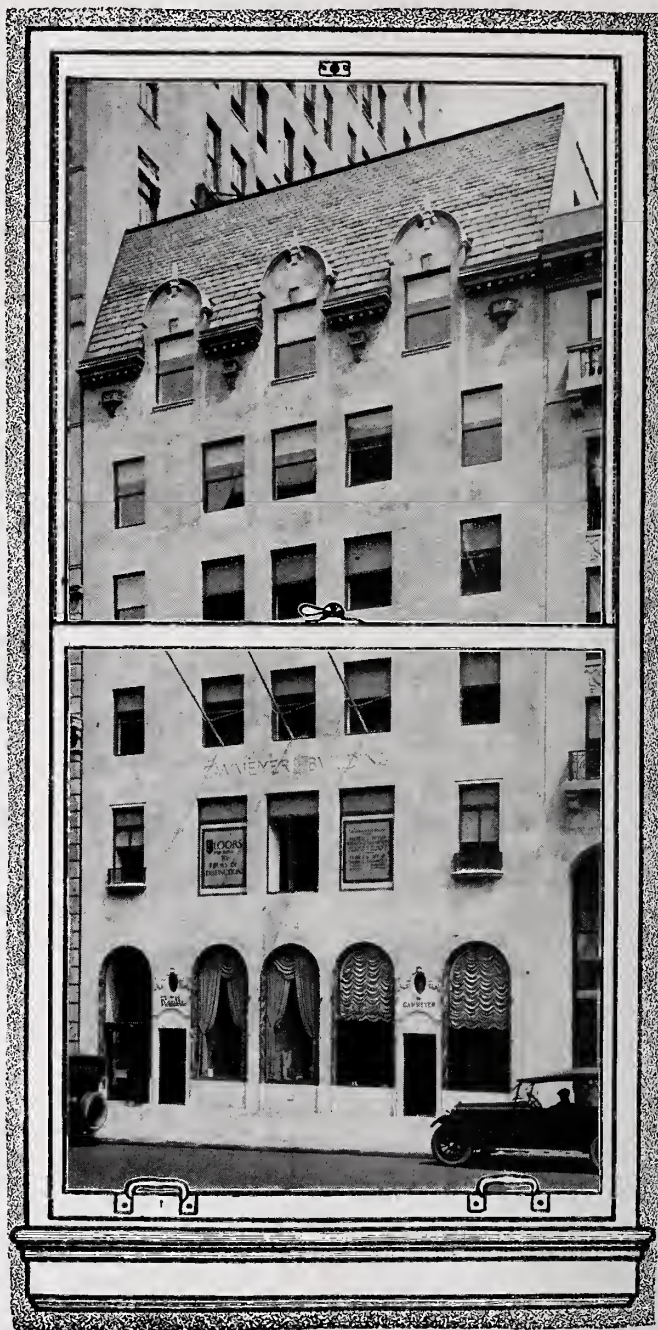
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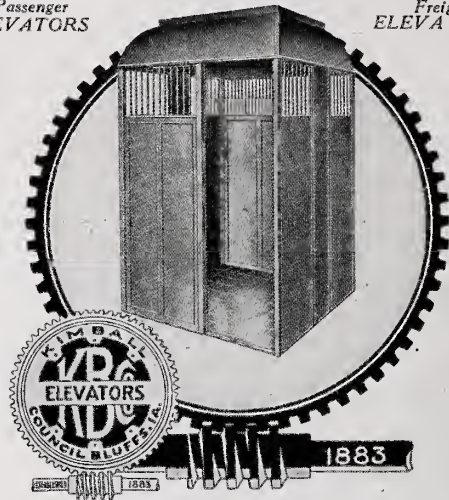
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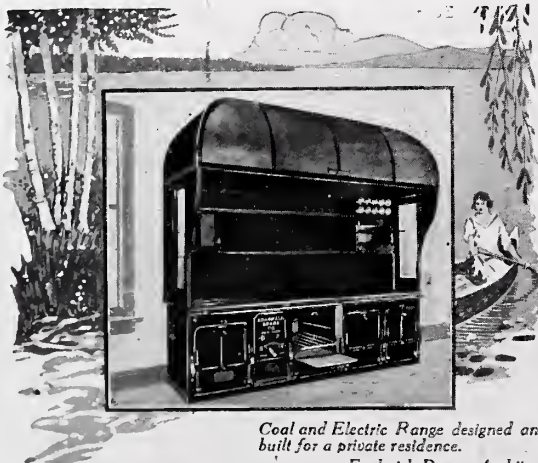
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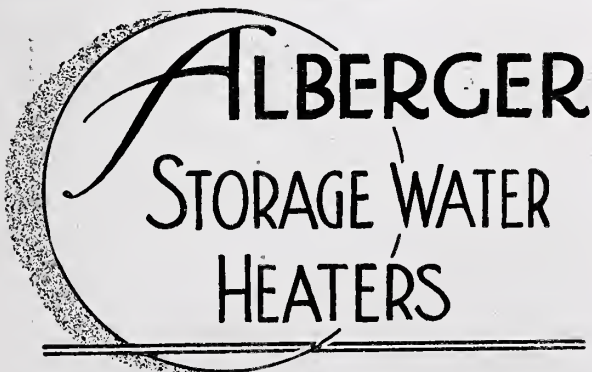
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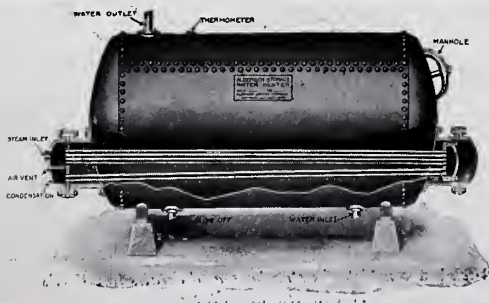


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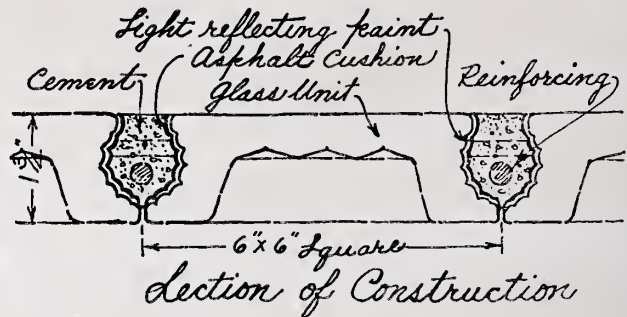
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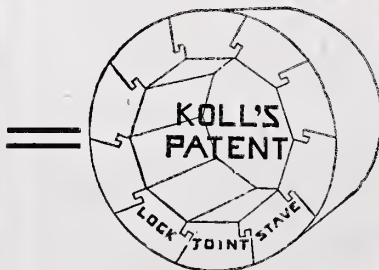
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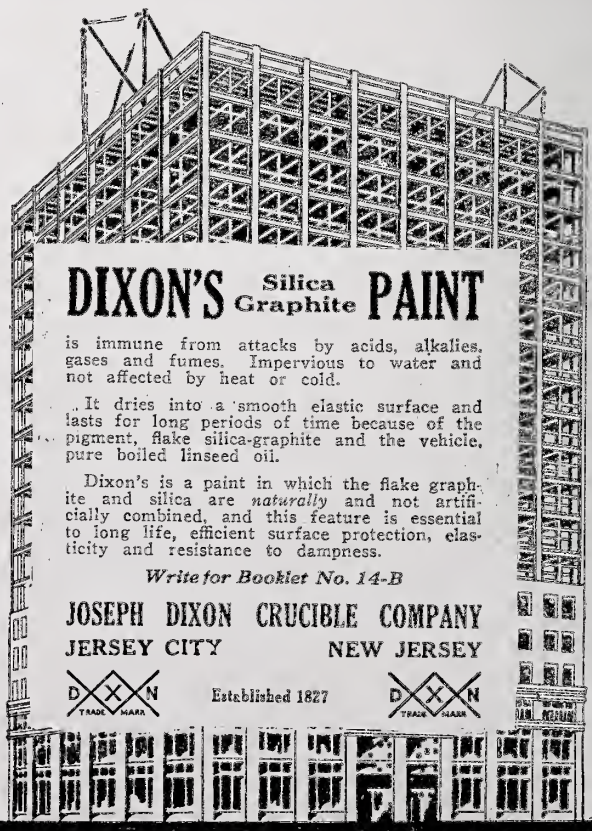
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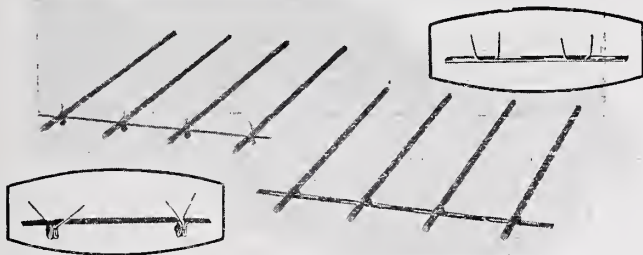
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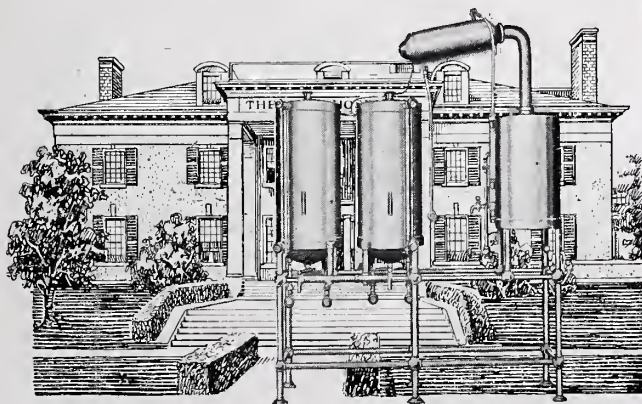
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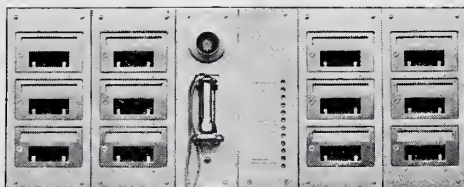
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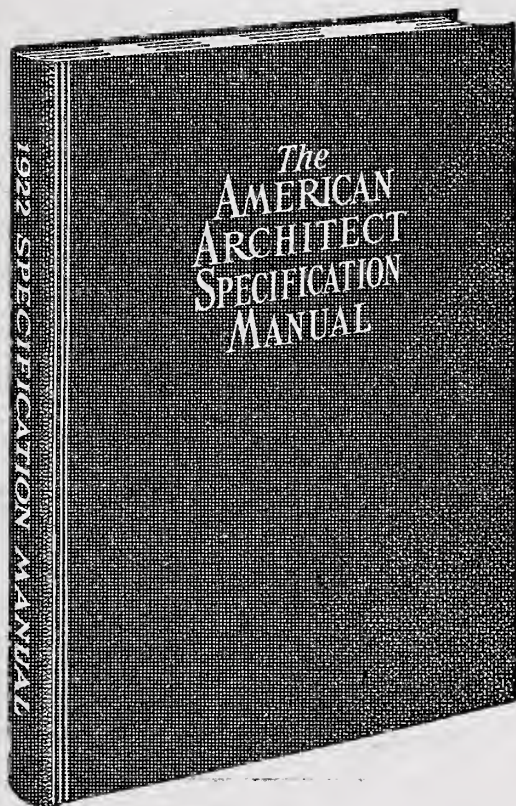
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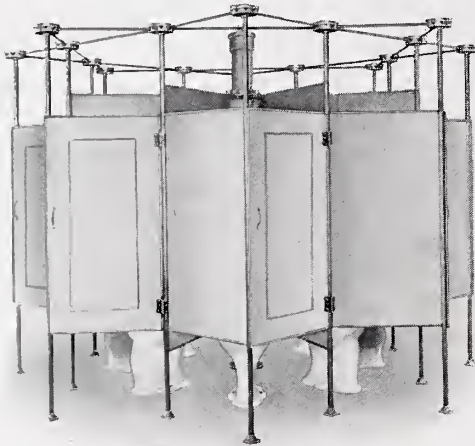
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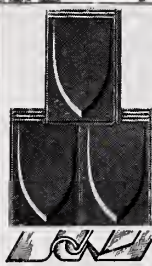


Fig. 157

Note the construction of patent interlocking device used on Edwards Metal Shingles and Spanish Tile

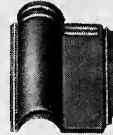


Fig. 357

Metal Spanish Tile for main part of roof.

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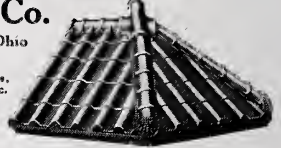
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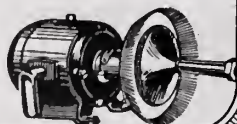
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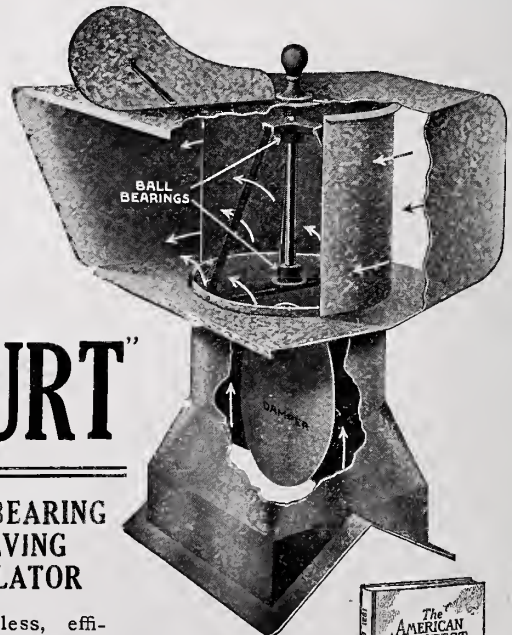
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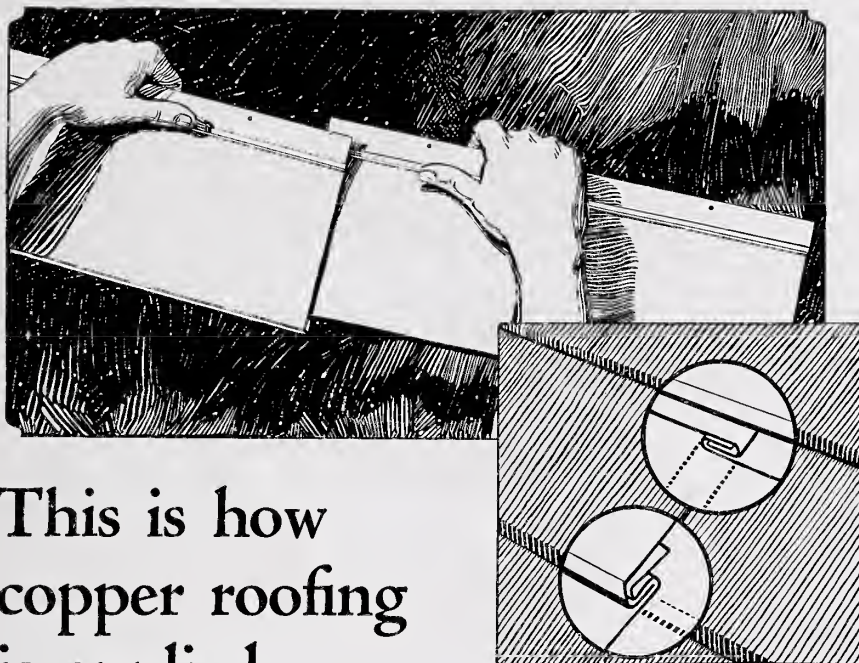
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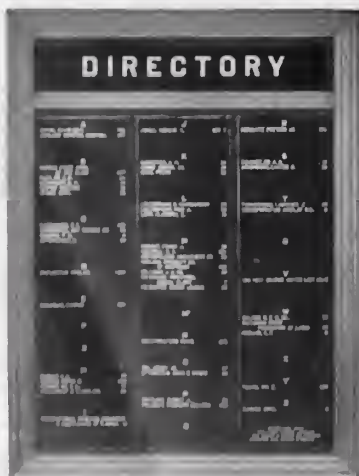
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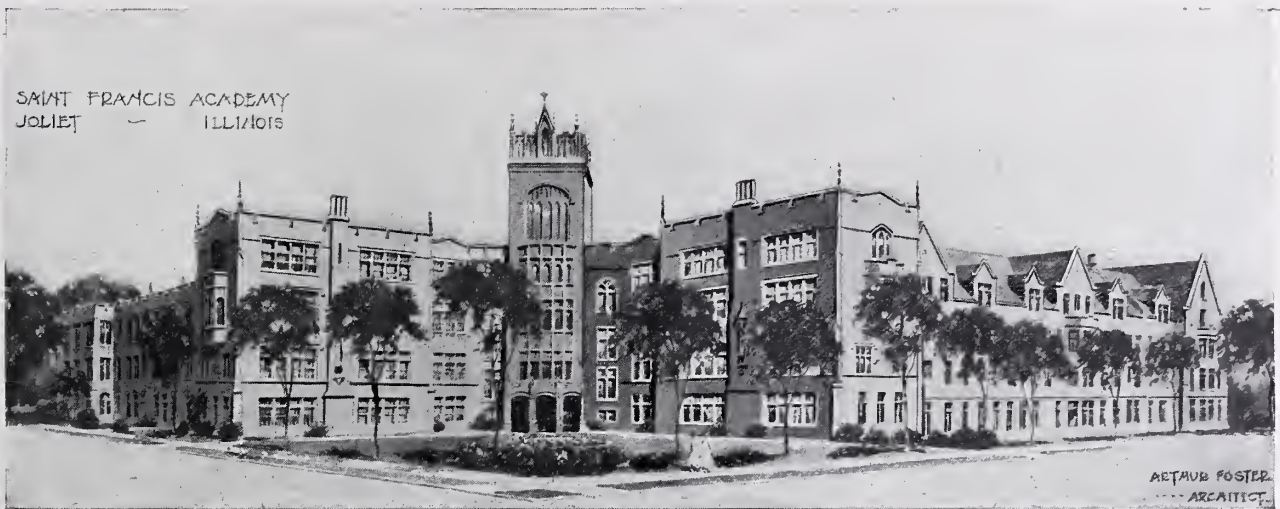
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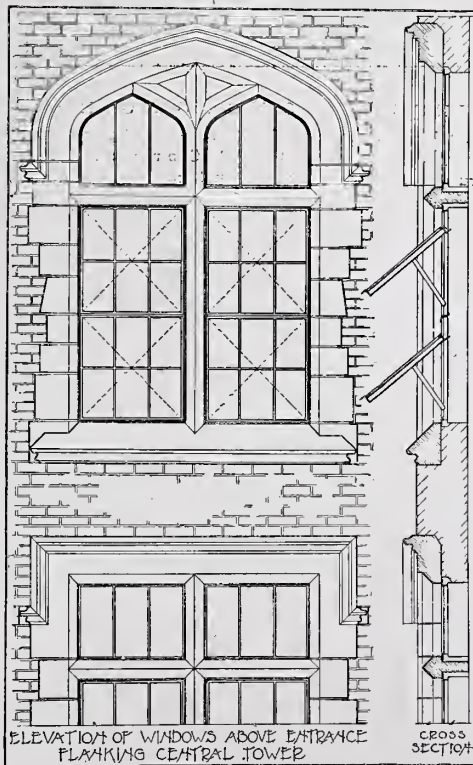
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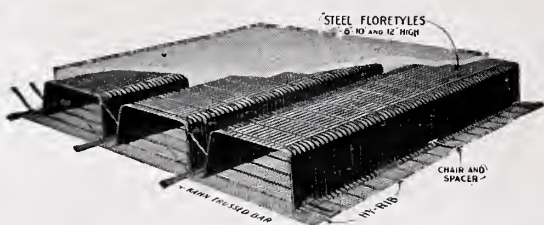
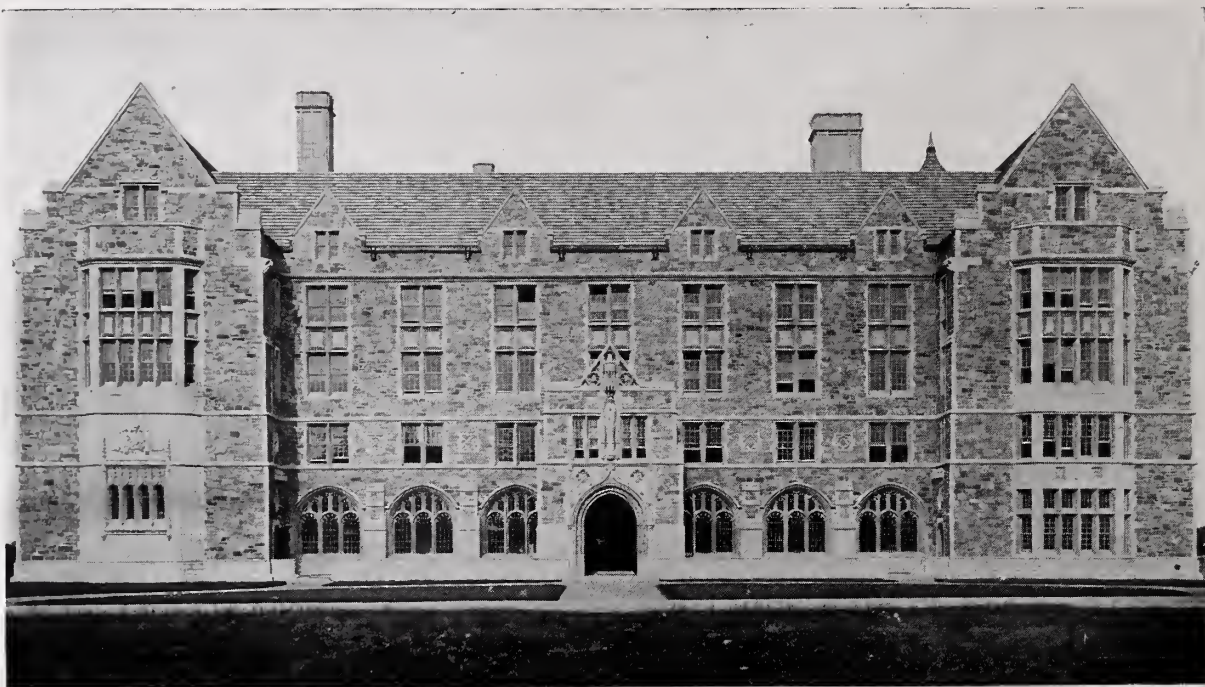
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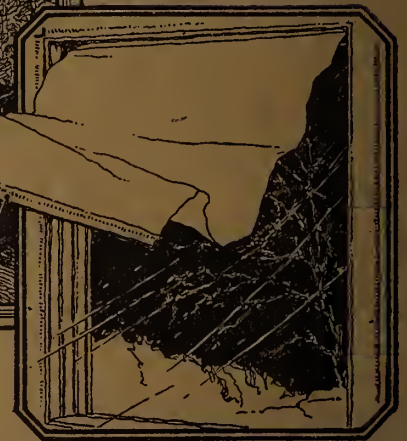


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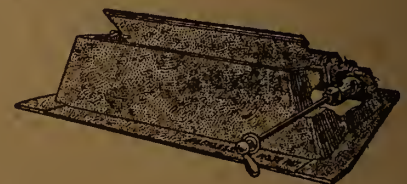
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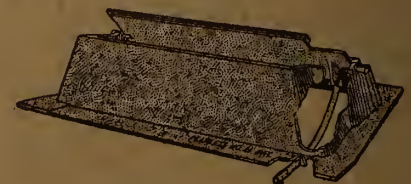
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